

IMPACT +

BUSINESS PLAN

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Authenticity Statement

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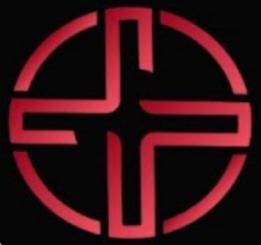
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Introduction

Executive Summary

Impact+ is a multi-use pad for “impact” sports designed to improve sports performance through data analytics. Our product is able to measure the force, positioning, and speed of a projectile thrown at it, and then relay these metrics to a mobile application. These metrics can be utilized by athletes and coaches to enhance performance through data-driven strategies.

We formed the idea of our product when we found an exigency in the youth sports market – a lack in at-home sports equipment designed, specifically for young, elite athletes. In short, we sought to develop a unique product that could be used for multiple sports, and also incorporate data analytics. As the world becomes increasingly more reliant on data, we believe that equipment that incorporates technology must offer a data analysis component, as this will become an order qualifier to consumers in the near future.

Our marketing objective is simple: generate awareness within the sports equipment industry by creating marketing campaigns that penetrate our target market. To accomplish this goal, our team has developed a detailed marketing strategy that considers increasing awareness, purchase intent, and ACV over five years of operations. We aim to generate awareness through push and pull marketing tactics outlined in our Integrated Marketing Communications schedule. Further, we will sell our product at \$220 – informed by our revenue maximizing pricing strategy – which simultaneously achieves a high purchase intent. Finally, we will utilize several distribution channels from Year 1 to 5 starting small with online sales and independent retailers, and working our way into the shelves of mass merchants.

Our business operations seek to match capacity with demand created by our marketing efforts. To produce Impact+, we are strategically partnering with dependable suppliers to source our raw materials and satisfy the standards of quality set by our consumers. Specifically, suppliers were chosen with experience, reliability and effective communication in mind. Once suppliers were chosen, we structured inbound and outbound logistics to meet forecasted demand as efficiently as possible. To further ensure efficiency, we designed our manufacturing facility in Durham, NC in the best interest of our workers and the area’s transportation infrastructure.

Over our product life cycle, our projected earnings of our model exceed our expected costs, as indicated by our healthy valuation numbers. Our NPV of \$772,032 and an IRR of 25.73% puts Impact+ in a strong financial position. To execute our business operations, Impact+ requires an initial start-up investment of \$1,328,000. \$250,000 of this investment comes from

family and friends, and \$1,078,000 of this investment comes from external investors whose interests align with our mission statement. This investment will help cover start-up costs relating to fixed assets, initial working capital, and initial operating expenses. After the initial investments in our start-up period, we will require two additional rounds of fundraising in Years 1 and 3.

In an effort to enter a highly competitive sports equipment industry, Impact+ is aware and prepared for inevitable risks. We have identified awareness and direct materials per unit as our two greatest risks, as these variables are the most elastic with our NPV. To mitigate risks associated with direct materials, we will implement procurement practices to reduce variance in costs. To mitigate risks associated with awareness, we will enforce contracts in our pull marketing campaigns to ensure that our partners fulfill their responsibilities and sufficiently promote our products. Additionally, we plan to diversify our guerilla marketing strategy to spread the risk between our campaigns.

Through our key positioning strategies, we believe that Impact+ will be able to enter the sport equipment industry successfully and obtain a large market share throughout its product life cycle. We look forward to diving in deeper with the business plan to show why you, as investors, should Invest, with Impact+.

Overview

Our Mission: Helping Customers Improve Sports Performance

Impact+ is dedicated to helping our customers improve sports performance through durable, portable, and effective technology.

Introduction Exhibit 1: Mission Statement

The mission statement of Impact+ (as shown in *Introduction Exhibit 1*) informs all of our business operations. As a company, we conceived a product concept that could afford customers the luxuries of a high-tech gym facility in the comfort of their own home. Fortunately, that product has come to life with Impact+, a multi-use pad for “impact” sports, like baseball and martial arts among others. Impact+ measures the pressure, positioning, and speed of a projectile thrown at it, and relays data through a mobile application. Users can utilize data metrics to track the analytics of their training session, compare their performance with other users in global leaderboards, and supplement their live coaching sessions in the comfort of their own home. In a transforming world crafted by data-driven decisions, we stand firm in our belief that our product enhances sports performance through groundbreaking technology.

Specializing in Youth Sports Market Within the Sports Equipment Industry

The U.S. sports equipment industry is valued at \$16.7 billion dollars, with a CAGR of 5% over 6 years (2021-2026).¹ Revenue for sporting goods stores rose 16.8% in 2020 due to an increase in spending on outdoor activity equipment, which is a healthy outlook for the industry.² The effects of COVID-19 can be attributed to the significant revenue growth for the industry, as people look to spend more time in outdoor open spaces and invest in personal, rather than shared, equipment.

Within the sporting goods industry, we target youth sports equipment which take into account the annual spending of involved parents. Parents’ costs on registration fees, travel,

¹ “With Market Size Valued at \$70.6 Billion by 2026, it’s a Healthy Outlook for the Global Sporting Goods Market”, Cision PR Newswire, Accessed December 5th, 2021, <https://www.prnewswire.com/news-releases/with-market-size-valued-at-70-6-billion-by-2026--its-a-healthy-outlook-for-the-global-sporting-goods-market-301377077.html>.

² “Sporting Goods Stores Industry in the US - Market Research Report”, IBISWorld, Accessed December 5th, 2021, <https://www.ibisworld.com/united-states/market-research-reports/sporting-goods-stores-industry/>.

camps, and equipment continue to grow year after year. Middle class families earning \$50,000 or less suggest that the growing fees tied to a kid's sport is the main reason why their kids are not active in team sports settings.³ With decreasing numbers of youth sports participation in middle to lower class families, we decided to target our segment to households earning \$75,000 or more annually. In terms of specific costs, families whose children are elite athletes spend an average of \$693 per child, per sport annually.⁴ The pricing of Impact+ then became another factor that was revised based on this finding.

Involved parents do not spend money on their children simply because they are involved; parents are often looking for extrinsic rewards as well. Extrinsic rewards, including admissions advantages to colleges, athletic scholarships, and pro sports opportunities, are earned through a child's talent in the sport⁵, which suggests that parents heavily value the extent to which their child can benefit from a piece of equipment. From this trend, we will focus on our feature that measures the speed, positioning, and accuracy of an object's impact, as it correlates the most with performance improvement.

Benefits of Impact+ Differentiate Us From Competitors

Within the sports equipment industry, Impact+ competes with a select number of products with similar attributes and differing benefits. The main competitor of Impact+ is INNOLIFE Boxing Device, a “professional boxing dynamometer”⁶ which essentially acts as a punching pad. Like Impact+, INNOLIFE measures force of a projectile – albeit fists for boxers – and offers accurate data relay for users. The other primary competitor of Impact+ is the Punch Sensor; similar to INNOLIFE, it measures the force of kicking and punching. Other smaller competitors

³ Aimee Picchi, “Game over: Middle-class and poor kids are ditching youth sports”, CBS News, Accessed December 5th, 2021,
<https://www.cbsnews.com/news/uneven-playing-field-middle-class-and-poor-kids-are-ditching-youth-sports/>.

⁴ “Youth Sports Facts Challenges”, Aspen Institute, Accessed December 5th, 2021,
<https://www.aspenprojectplay.org/youth-sports-facts/challenges>.

⁵ “Survey: Kids Quit Most Sports By Age 11”, Aspen Institute, Accessed December 5th, 2021,
<https://www.aspenprojectplay.org/national-youth-sport-survey/kids-quit-most-sports-by-age-11>.

⁶ “INNOLIFE Boxing Force Measurement Device,” Best Online Shopping Store for Electronics, Fashion, Home Improvement & More in Panama, Accessed December 5, 2021,
<https://www.ubuy.com.pa/en/product/PU7TUO-innolife-boxing-force-measurement-device-professional-power-measuring-equipment-with-punching-pad-fo>.

include Franklin's Sports Pitch Back⁷ and the Radar Pitching Trainer⁸, a flyback net to practice projectile sports and a baseball pitch trainer that tracks analytics, respectively. (See *Introduction Exhibit 2* for complete competitor table). Overall, Impact+ differentiates itself from its competitors in two main areas:

1. Depth of training analytics
 - a. Including speed, force, accuracy, and sports-specific metrics
2. Benefits of being app-based
 - a. Transparency of data metrics
 - b. Ability to relay and store more information from workouts
 - c. Allows coach to view and tailor at-home training sessions

Product	Differentiating Benefits	Price
Impact+	<ul style="list-style-type: none"> ● Force and radar sensors takes the force measurement, positioning of an impact, and speed of a projectile thrown at it ● Relays data metrics to mobile app ● Allows coach to view metrics and cater practices to player 	\$220
INNOLIFE Boxing Device	<ul style="list-style-type: none"> ● Compact device to measure impact force ● Detachable, soft, and protects walls/hands ● Rechargeable battery 	\$320
Franklin Sports Pitch Back	<ul style="list-style-type: none"> ● All-weather net, unique curved design, with an adjustable angle ● Allow children to enjoy this reliable flyback net for improving practicing 	\$60
Punch Sensor ⁹	<ul style="list-style-type: none"> ● Measures forces of kicking, pushing, or punching at 1,000 times/ second ● 18" x 20" padded surface ● Real-time data will be monitored on software compatible with Windows devices 	\$2,600
Radar Pitching Trainer	<ul style="list-style-type: none"> ● Keeps pitch count, strike outs, and walk statistics ● Calculates ball speed from 25 to 95 mph ● Heavy-duty 16 gauge steel frame with collapsible hinges 	\$300

Introduction Exhibit 2: Attributes of Competing Products

⁷ "MLB BASEBALL PITCH BACK REBOUNDER - 68' X 48,'" Franklin Sports, Accessed December 5, 2021, <https://franklinsports.com/mlb-pitch-back-baseball-rebounder-68-x-48-inch>.

⁸ "Radar Pitching Trainer," Pitching Target, Virtual Umpire - Radar Pitching Training, accessed December 5, 2021, <http://www.radarpitchingtrainer.com/>.

⁹ "Punch Sensor ,," Punch Sensor Home, Accessed December 5, 2021, <https://www.punchsensor.com/>.

To make our vision of Impact+ come to life, we created several mockups of Impact+ as a standalone product. In *Introduction Exhibit 3* below, you can see the product's front padding, radar sensor, and the back collapsible wheels. We also created visuals of Impact+ being used by players of different sports. In the bottom left corner, Danny (7) is practicing his football aim with Impact+ in his backyard. In the bottom right corner, Isabella (19) is practicing her backhand stroke in a park near her house – attempting to see how strong her swing is before her match tomorrow. As we believe in our mission, our product helps our customers of all impact sports improve their performance through data driven metrics.



Introduction Exhibit 3: Impact+ Product Visuals

Corporate Social Responsibility

Corporate Social Responsibility is a top priority at Impact+ and helps define our company's character. We believe that Impact+ is responsible for more than just improving at home sports equipment, and instead must play a larger role in bringing the community together for a shared greater good. As a result, we have devised initiatives that benefit the community and achieve our company's mission.

Sourcing Recyclable and Ethically-Sourced Materials Reduces Carbon Footprint

We decided to focus on reducing our carbon footprint as one way to implement corporate social responsibility. Aluminum is one of the most commonly recycled metals globally – a large reason why this metal is used as the material for the Impact+ frame. Recycling aluminum helps reduce our carbon footprint, save energy, and ultimately reduce the emission of greenhouse gases¹⁰. The aluminum we use is also ethically sourced from a supplier in the United States, and only costs us \$2.11 per foot. From our New Product Questionnaire, 33% of survey respondents indicated that they would be significantly more likely to buy our product if our products were ethically sourced (See *Introduction Exhibit 4: CSR Purchase Intent Summary Table*). This finding helped reinforce our first CSR initiative and move forward with the use of aluminum as our product's frame.

Question #1	If knowing the materials of our product are ethically sourced, would this change your intent to purchase?			
Purchase Intent	# of Responses	% of Responses	CSR Increase	Total CSR Lift
Significantly More	12	33.3%	2.50%	0.83%
Increase Somewhat	7	19.4%	1.50%	0.29%
No Change	17	47.2%	0%	0%
Total	36	100%		1.13%

Introduction Exhibit 4: CSR Purchase Intent Summary Table (Materials)

¹⁰ Bethany Wieman, "What Are the Benefits of Recycling Aluminum?", SFGate, Accessed December 5th, 2021, <https://homeguides.sfgate.com/benefits-recycling-aluminium-79200.html>.

Hosting Turkey Drive to Aid Local Underfunded Youth Sports

Beyond making our internal operations environmentally and ethically conscious, we also sought to create an initiative to uplift the communities in which we do business. Our second initiative, which we call our “Turkey Drive”, is inspired by the giving traditions of Thanksgiving and the holiday season. During the month of November, Impact+ will host a canned food drive in our headquarters’ local community in Durham, NC. Our Turkey Drive will be a call to action to youth sports programs in the area to donate canned goods which will be donated to the local homeless shelters. The team that donates the most cans will be rewarded with five Impact+ products for their program’s use. Through this initiative, we aim to give back to our community’s youth sports, as well as our homeless population during the holiday season. Furthermore, 47% of survey respondents indicated that they would be significantly more likely to purchase this product based on an event like this (See *Introduction Exhibit 5: CSR Purchase Intent Summary Table*). For these reasons, we believe that it is worthwhile to move forward with this initiative.

Question #2		If the company selling our product was to donate our product to underfunded sports teams in our local community, would this change your intent to purchase?		
Purchase Intent	# of Responses	% of Responses	CSR Increase	Total CSR Lift
Significantly More	17	47.2%	2.50%	1.18%
Increase Somewhat	7	19.4%	1.50%	0.29%
No Change	12	33.3%	0%	0%
Total	36	100%		1.47%

Introduction Exhibit 5: CSR Purchase Intent Summary Table (Donation)



Marketing Management

Section 1

MARKETING MANAGEMENT

Key Marketing Objectives and Ideation Behind Impact+

Our main marketing objective is to generate awareness within the sports equipment industry by creating marketing campaigns that penetrate our target market.

The idea of Impact+ was formed when we recognized a lack of at-home sports equipment designed specifically for young, elite athletes. From there, our team brainstormed ideas to create a unique product that would be catered and used for various sports. Through market research, we found that there was a lack in sports performance metrics for youth athletes. Parents of these athletes also have to rely heavily on coaches for their children to work and improve in their respective sports. However, findings show that “less than 30% of youth coaches have been trained in the past year in CPR, basic first aid, concussion management, general safety and injury prevention, physical conditioning, sports skills and tactics, or effective motivational techniques.”¹¹ Not only are parents paying for the cost of a coach that might be inadequately trained, they also spend time and money traveling to athletic facilities. On average across all sports, parents spent more annually on travel (\$196 per sport, per child) than equipment (\$144), private lessons (\$134), registration fees (\$125), and camps (\$81).¹² Realizing the need to address these problems, our team’s vision is to provide these athletes with an easy and accessible way to improve their game without the need of an extravagant facility or expensive coach.

To accomplish our goal of having a strong presence in the sports equipment industry, our team has developed a detailed marketing strategy. We aim to generate awareness through push and pull marketing tactics outlined in our Integrated Marketing Communications schedule. We also plan to achieve a high purchase intent by executing a revenue maximizing pricing strategy. Finally, we will utilize several distribution channels from Year 1 to 5 starting small with online sales and independent retailers, and working our way into the shelves of mass merchants.

¹¹ “State of Play - Trends and Developments in Youth Sports,” The Aspen Institute - Project Play, 2019, https://www.aspeninstitute.org/wp-content/uploads/2019/10/2019_SOP_National_Final.pdf, 2.

¹² “State of Play - Trends and Developments in Youth Sports,” The Aspen Institute - Project Play, 2019, https://www.aspeninstitute.org/wp-content/uploads/2019/10/2019_SOP_National_Final.pdf, 14.

Market Research

Understanding Values of the Consumers Through Interviews

We began our market research process with primary research, conducting interviews with friends, families, and experts. We sought to answer the questions: what do you, a consumer, look for in sports equipment? What do you like? What do you dislike? From these interviews, we discovered that consumers seek consistency and reliability in their athletic equipment. They also appreciate equipment that is specialized to their needs and offer a data analytics component.

Some quotes from consumer interviews include:

- “Consistency, state of health and mind, and regular routine are important to an athlete’s workout.” – *Blake Nelson, College Soccer Player*
- “Equipment is a crucial part of improving as an athlete especially if you are able to continue using the equipment at home.” – *Caterina Soderi, Family Member*
- “Data is important in most sports, and I feel like most athletes are always analyzing their stats and seeking to improve numbers.” – *Jimmy Vo, Tennis Coach*
- “Your product would allow people to have their performance data at home.” – *Angela Lee, Family Member*

Analyzing the Market from Online Research

Through online research, we found that parents with child athletes have high expectations for what they are able to achieve. Parents whose children are elite athletes spend \$100-\$499 a month on sports expenditure.¹³ The market for sporting equipment is valued at \$16.7 billion dollars which demonstrates that there is opportunity in this industry.¹⁴ The fact that families are willing to pay more for the children’s athletic career affirms our belief that we are able to make sustained profit. Further, children attend practice for upwards of 60 hours per week through the season.¹⁵ Parents spend a lot of time and energy in order to drive their kids to practices. With the

¹³ Mandy Antoniacci, “New Data Reveals: Parents Invest in Their Kids’ Sport over Retirement,” Inc.com (Inc., September 2, 2016),

<https://www.inc.com/mandy-antoniacci/new-data-reveals-parents-invest-in-their-kids-sport-over-retirement.html>.

¹⁴ “With Market Size Valued at \$70.6 Billion by 2026, it’s a Healthy Outlook for the Global Sporting Goods Market”, Cision PR Newswire, Accessed December 5th, 2021, <https://www.prnewswire.com/news-releases/with-market-size-valued-at-70-6-billion-by-2026--its-a-healthy-outlook-for-the-global-sporting-goods-market-301377077.html>.

¹⁵ “Survey: Kids Quit Most Sports By Age 11”, Aspen Institute, Accessed December 5th, 2021, <https://www.aspenprojectplay.org/national-youth-sport-survey/kids-quit-most-sports-by-age-11>.

guardian's desire to help their children improve and become the best to their ability, it would be very plausible for them to invest in an Impact+ unit. By reducing the time it takes for their child to travel to an athletic facility, that would translate to more time for the athlete to practice a pitch or a punch, for example.

Looking at Home Exercise Equipment Trends Through Social Listening

In an attempt to find seasonality trends relating to our product category, we looked for consumer feedback through Google Trends and social media. Upon research in Google Trends, we concluded that "exercise equipment" interest peaks every New Year's when people form their New Year's resolutions. "At home gym equipment" and "practice at home" interest peaked the highest during February and March of 2020. We assume that this peak was a result of the beginning of the pandemic when consumers began to look for alternative ways to keep in shape at home. Although there has been a decline since its peak, it is still significantly higher in interest compared to the last five years. Related queries also included golf, tennis and target practice. These related queries have also begun to decline since teams are beginning to practice in person again.

Gaining Insight from Experts and Shopping Observations

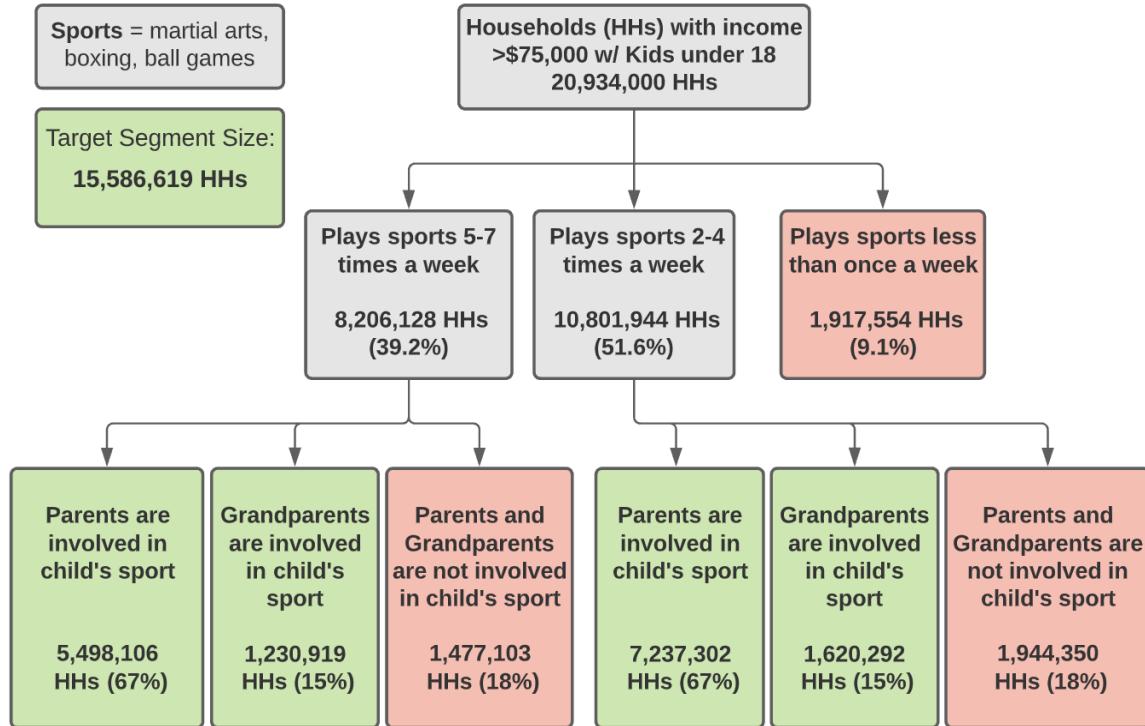
To gauge an understanding of sports equipment from the retailer side, we spoke with representatives at Olympia Boston and Boston AllStars. After speaking with both managers, we learned that consumers are often families or a parent accompanied by their child, and the average purchase of sports equipment and gear ranges from \$50-65 per family. The most common sports equipment sold at both stores were related to baseball and soccer, though basketball equipment is also very popular. Furthermore, after asking about higher priced items like our product, we learned that the big ticket equipment items are usually purchased by wealthy families with a history of athletes in their family. Customers tend to inquire about price and durability most often, revealing that these are the most important customer attributes. Other learnings include that sports equipment is most commonly purchased at the beginning of the school year or during late summer, and is not returned often.

Target Segment

Targeting Devoted Dads and High Hopes

Our target markets are Devoted Dads and High Hopes. We believe that Impact+ would be the most useful to youths who are active in competitive sports, since athletes who play at the collegiate and professional level would have access to state-of-the-art equipment in private facilities. Additionally, this would provide the (grand)parents more flexibility when it comes to traveling for their student athlete. The guardian would be able to help coach the youth through the data that Impact+ provides. These markets want their child(ren) to succeed in their sport and attain an athletic scholarship for college and/or make it to the professional level. These (grand)parents are willing to invest a lot of time and money into their (grand)children's athletic career. They will attend their games, build communities with guardians of teammates, and even hire private coaches to ensure that the child is able to excel in performance. (See *MK Appendix 1: Segmentation Grid*). Over the 15 years of our product life cycle, we believe that our target market will increase by 1% each year due to the drive for youths to be healthier especially post-pandemic. Additionally, the US Department of Health and Human Services is planning to have more programs and policies at the local, state, and national level to increase access to sports facilities. They also seek to make youth sports programs and facilities safe, accessible, and inclusive.¹⁶

¹⁶ “Increase the Proportion of Children and Adolescents Who Play Sports ,” Office of Disease Prevention and Health Promotion, accessed December 5, 2021, <https://health.gov/healthypeople/objectives-and-data/browse-objectives/physical-activity/increase-proportion-children-and-adolescents-who-play-sports-pa-12>.



MK Exhibit 1: Segmentation Tree

Positioning Statement Defines the Differentiation of Impact+

Impact+ is for households with children (under 18)

- who regularly play sports
- whose (grand)parents are involved
- who lack trained coaches
- who seek data analytics to improve performance
- who are looking to reduce travel time to practices.

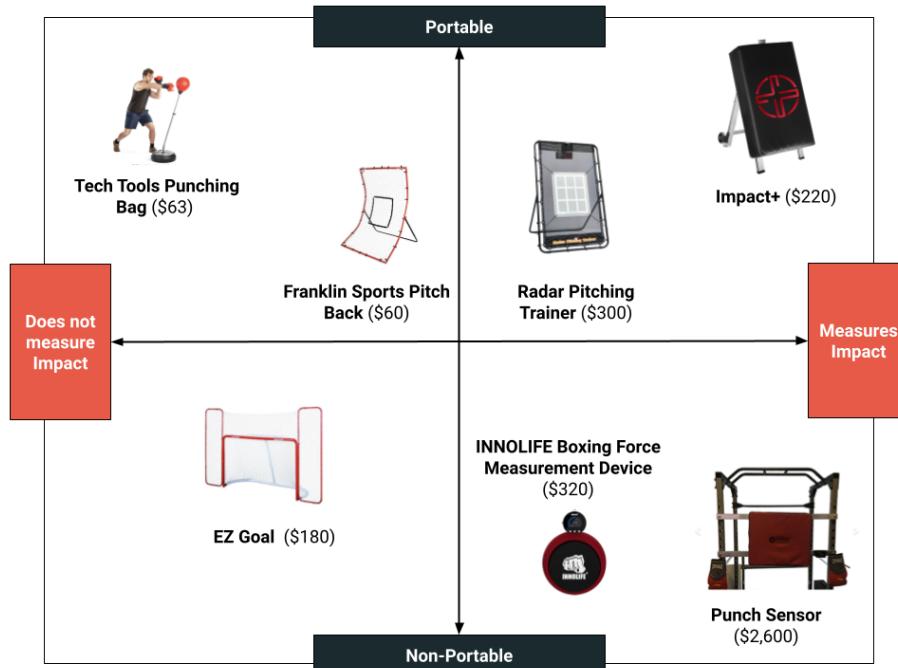
Impact+ is an innovative sports equipment that uses data analytics to improve sports performance by measuring the speed, force, and positioning of a projectile. The Impact+ is portable, durable, and offers a large surface area, unlike INNOLIFE and similar products.

MK Exhibit 2: Positioning Statement

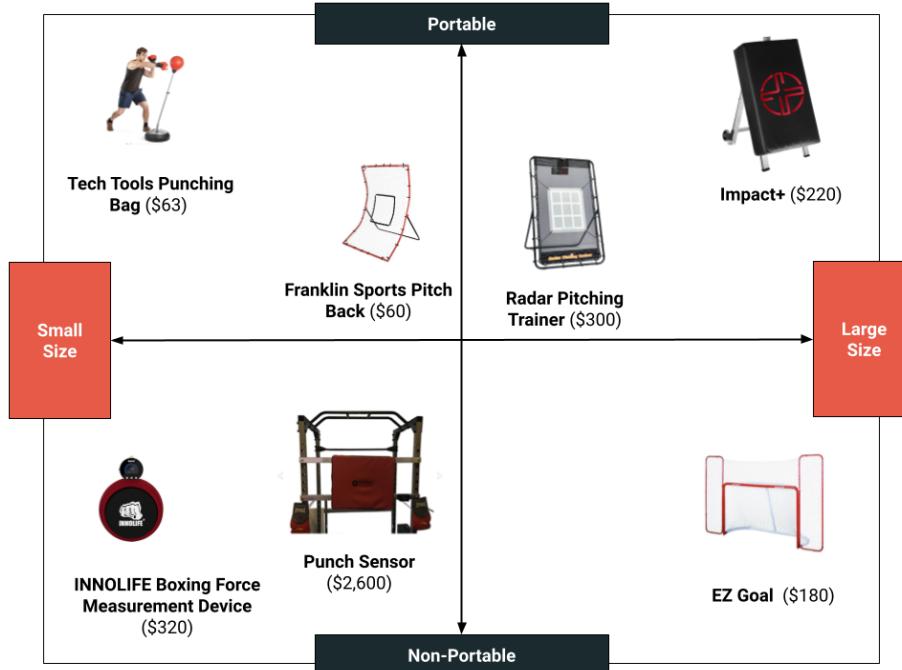
When taking a first glance at Impact+, it could be compared to other fitness equipment such as the Radar Pitching Trainer and Punch Sensor. However, Impact+ is unique, being a multi-use pad for impact sports that uses technology to enhance performance. With the ability to

relay and store data, such as speed and accuracy, Impact+ helps athletes improve their game at home or on the go. The ease of use attracts athletes who seek development on their own without the need of an upscale facility.

Based on consumer interviews and conjoint analysis surveys results, we recognize that customers value portability, the ability to measure impact, and size of the product. With these values in mind, we have placed Impact+ in the top right quadrant in both positioning maps. From the first positioning map, it is shown that our product has high portability and can measure impact, unlike other potential competitors (See *MK Exhibit 3: Impact vs. Portability Positioning Map*). Size, which is another high customer value, is used in the second positioning map to show that Impact+ is large relative to other products, while still being portable (See *MK Exhibit 4: Size vs. Portability Positioning Map*).



MK Exhibit 3: Impact vs. Portability Positioning Map



MK Exhibit 4: Size vs. Portability Positioning Map

Integrated Marketing Communications

Pull Marketing

Shaping Brand Image Through Online Advertising and Website

Our company plans to advertise online primarily through social media and search engine optimization (SEO). On social media, we will use Instagram (@shopimpactplus) as a primary page for communicating our value proposition, as well as engaging with our target market. In August 2021, Instagram introduced the Shop Tab “to make it easier for people to discover and shop from brands when they’re already in the mood to browse”.¹⁷ Due to the ease of interacting with consumers and capability to shop, we believe Instagram is an incredible opportunity to create brand awareness and ad conversions. Further, we will invest in SEO campaigns on Google to target consumers who search for words relevant to our product (e.g., “sports equipment”, “sports data analytics”, etc.). To fund our online advertising campaigns, we will allocate 10-15% of our pull marketing budget in all five years to generate awareness within our target market.

¹⁷ “Introducing Ads in the Instagram Shop Tab,” Instagram for Business, August 24, 2021, <https://business.instagram.com/blog/introducing-ads-in-the-instagram-shop-tab>.

On top of online advertising, we are launching our own website (www.impactplus.com) to centralize the story and brand of Impact+. While our website doesn't generate awareness, it will serve as a place for consumers to learn about our product and send us any questions, comments, or concerns they may have. To purchase our product, customers can click on a button that leads directly to our selling page on Amazon. In Year 1, we will pay \$10,000 for a professional website designer to create our page. In the following years, we will pay \$1,500 per year for upkeep and maintenance.

Outdoor and Transit Advertising Reach Families in Top Sport Cities

In Year 3, as we transition from the introduction stage to the growth stage of our product life cycle, our company will begin ambitious marketing campaigns to create awareness among our target market. A substantial amount of awareness will be generated through outdoor and transit advertisements, namely in cities that are popular with youth sports. We selected cities specifically in the east coast and midwest region, as this is where we are rolling out Impact+ in our first few years. After comparing costs of running outdoor and transit advertisements in eleven different cities, we selected three that are both cost-efficient and will generate awareness between 1.5-3%. The three cities include the destination of our launch – New Haven, CT – as well as Milwaukee, WI and Columbus, OH. From Years 3 through 5, we will run billboard, bus, train, and airport advertisements in New Haven and Milwaukee because these cities have a larger share of our target market. In Year 5, when our marketing budget increases and we introduce mass merchants into our ACV channel mix, we will also run similar advertising campaigns in Columbus, OH. By this time, our outdoor and transit advertisements will cost nearly \$200,000 and will generate 6.06% awareness among our target market.

City	Years in IMC	Method (Constant for Y3-5)	Total Cost	Awareness
New Haven, CT	Y3-5	<ul style="list-style-type: none"> ● Billboard ● Bus Ad ● Train Ad ● Airport Ad 	\$84,419	1.73%
Milwaukee, WI	Y3-5		\$59,831	2.53%
Columbus, OH	Y5		\$57,623	1.80%
Total Outdoor/Transit			\$201,873	6.06%

MK Exhibit 5: Outdoor/Transit Advertisements Metrics

Using Public Relations to Create and Maintain Impact+’s Positive Reputation

Our company plans to have a public relations team across all five years. Our PR team will be working with magazines and blogs such as Sports Illustrated, US Today: Sports Weekly, Sports Unlimited, and I9 Sports to obtain product features for more exposure. All magazines and blogs elaborate on sports, health, and wellness which align with the interests of our target segment. In addition, the team will work to continue to build and maintain a positive public image for our brand. To do so, they will execute positive publicity strategies, work with the public and press, and respond to brand inquiries.

Investments in Magazine Advertisements Account for an Increase in Awareness

In Year 3, as we transition into the growth stage of our product life cycle, we begin to roll out substantial marketing campaigns. At the forefront of these campaigns, we introduce magazine advertisements in three principal magazines in our target market niche: Sports Illustrated Kids, Alive, and Outside. Below is a table illustrating the specific metrics for each magazine.

Magazine	Target Circulation	Cost of Ad	CPM	Total Impressions	Awareness
Sports Illustrated Kids	855,000	1/2: \$18,900	\$36.84	2,052,000	4.04%
Alive	220,000	Full: \$11,975	\$54.43	880,000	1.73%
Outside	573,750	1/3: \$41,675	\$177.34	939,991	1.85%

MK Exhibit 6: Magazine Advertisements Metrics

Sports Illustrated Kids’ readers most resonate with our target audience of young athletes and/or parents of athletes. According to their 2021 Media Kit, Sports Illustrated Kids is “Built for Kids Who Live for Sports and Love to Play”, a motto that aligns perfectly with the mission of Impact+.¹⁸ From Years 3-5, we will launch advertisements in this magazine during the May/June and July/August issues, where the themes are “Summer Camp” and “Summer Olympics” respectively.¹⁹ Advertising during this time generates exposure to households in our target market

¹⁸ “SI Kids Overview,” Sports Illustrated Kids 2021 Media Kit (Danny Lee, November 17, 2020), https://images.saymedia-content.com/.image/cs_srgb/MTc3MTkyODY2NjI2NDEzNzI5/si-kids---2021-media-kit_maven_112020.pdf, 2.

¹⁹ “SI Kids Overview,” Sports Illustrated Kids 2021 Media Kit (Danny Lee, November 17, 2020), https://images.saymedia-content.com/.image/cs_srgb/MTc3MTkyODY2NjI2NDEzNzI5/si-kids---2021-media-kit_maven_112020.pdf, 3.

during the summer when athletes are active, as well as before school starts in September when organized youth sports begin.

Unlike Sports Illustrated Kids, our goal with advertising in Alive Magazine is to target the mothers of youth athletes. From our research, we found that Alive readers are “predominantly women from 25 to 39 years old” who “lead highly active lifestyles” and are “the principal shoppers for their home.”²⁰ We believe active mothers of children who play sports are seeking products, like Impact+, to improve their child’s sports performance. From Years 3-5, we will launch advertisements in this magazine during the January/February and September/October issues, where the themes are “Heart Health” and “Kids’ Health” respectively.²¹ During these issues, Alive promotes sports-nutrition and products that support children’s health, which serve as a great vehicle to advertise Impact+.

Finally, we will advertise in Outside magazine whose mission is to “to inspire active participation in the world Outside”.²² From Years 3-5, we will launch advertisements in this magazine during the summer issue which serves as “The Definitive Guide for Summer Gear; Featuring Soft Goods, Hard Goods, and Luxuries to Necessities for Every Pursuit”.²³ As a product catered towards the pursuit of young athletes interested in improving their sports performance through data, we believe that the summer issue of Outside will be a great way to promote Impact+.

Participating in Events and Fairs to Continue to Grow Brand Awareness

Events play an important role when it comes to pulling our target audience to raise brand awareness. After research of events, we look forward to participating in three state fairs: two in Connecticut (Berlin Fair, Terryville Lions Country Club) and Minnesota State Fair. We chose two events from Connecticut because New Haven is the site of our product launch. The Minnesota State Fair is the second largest state fair in the U.S with 2.25 million visitors.²⁴ Due to the large scale and longevity of the Minnesota State Fair, it raises the most awareness of all the

²⁰ “Alive Magazine 2021 Media Kit ,” alive Magazine, 2021,
<https://alive.mblcdn.com/uploads/al/2021/04/2021-alive-USA-Media-Kit.pdf>, 2.

²¹ “Alive Magazine 2021 Media Kit ,” alive Magazine, 2021,
<https://alive.mblcdn.com/uploads/al/2021/04/2021-alive-USA-Media-Kit.pdf>, 5.

²² “Outside Media Kit 2021,” Outside, 2021,
<https://outsidemag.s3.amazonaws.com/mediakit/2021OutsideMediaKit-120220.pdf>, 1.

²³ “Outside Media Kit 2021,” Outside, 2021,
<https://outsidemag.s3.amazonaws.com/mediakit/2021OutsideMediaKit-120220.pdf>, 7.

²⁴ Mollie, “The Biggest State Fairs in the United States [Top 10],” Readers.com®, September 18, 2019,
<https://www.readers.com/blog/biggest-state-fairs/>.

events (1.50%). These state fairs are held during summer before school begins so people can purchase Impact+ before their sports season (see *MK Exhibit 7: Events Marketing Costs*).

Since we are in the fitness industry, we participate heavily in athletic events (see *MK Exhibit*) in all 5 years. Athletic Business Conference is the largest comprehensive trade show for athletics, fitness, and recreation professionals.²⁵ One unique feature of this event is that they have a “demo stage” and “free throw court” which allows attendees to try out the exercise equipment on the spot. At the end of the year, we attend the Betting on Sports America Conference, also known as SBC Summit North America, featuring leading operators, regulators, and sports organizations. This conference can help us as a startup company to build relationships with similar companies and promote our product to sports organizations. Events are all held in different months, so we can have events in all seasons. These events raise awareness by 3.43% every year.

Events	City	Month of Event	Costs	Awareness
USA Lacrosse Convention	Baltimore, MD	Jan	\$4,350	0.26%
NBC4 Fitness & Health Expo	Washington, DC	Mar	\$3,160	0.19%
Berlin Fair	Berlin, CT	Jul	\$2,280	0.14%
Terryville Lions Country Fair	Terryville, CT	Aug	\$2,800	0.17%
Minnesota State Fair	St Paul, MN	Aug- Sep	\$25,000	1.50%
Athletic Business Conference & Expo	Orlando, FL	Oct-Nov	\$2,850	0.17%
Monumental Health and Fitness Expo	Indianapolis, IN	Nov	\$6,750	0.41%
Betting on Sports America Expo	Jersey City, NJ	Nov-Dec	\$10,000	0.60%
Total per Year				\$61,890
				3.43%

MK Exhibit 7: Events Marketing Costs

Engaging with Potential Consumers Through Unique and Creative Events

Guerilla marketing is a unique and effective strategy for companies to engage with its target audience to reach more traffic and generate responses. We plan on implementing guerilla

²⁵ “AB Show 2021: Event Overview,” Athletic Business, accessed December 5, 2021, <https://www.athleticbusiness.info/abshow2021.html>.

marketing strategies throughout our five years through two different approaches: attending carnivals and hosting a canned food-drive.

Our first guerilla marketing strategy is executed through local carnivals. We will be incorporating our Impact+ product into a dunk-tank styled carnival booth game. Our audience will first throw a ball at the Impact+. When the ball hits our target on the pad, the booth worker in our dunk tank will be dropped into the tank and elicit a positive response from the audience. In addition, the data metric from each throw will be displayed on a screen to highlight the features of our product. We will also have a prize booth. Our audience will be throwing a ball at our Impact+ and if our participant throws and surpasses a fixed speed, force, or a point on our pad, they will be rewarded with a prize. This strategy is an effective way for our target audience to try our product and see how it works in an engaging and fun way.

Our second guerilla marketing strategy is an annual canned food-drive. The Impact+ Turkey Canned Food-Drive is a fundraiser that influences our local youth sports programs to donate canned goods during the Thanksgiving season in an engaging style. As described in our *CSR initiatives*, this strategy is an effective way to generate responses and word of mouth about our product while giving back to our community.

Collectively, these guerilla marketing strategies will cost us a total of \$9,330 annually and generate 1.94% awareness each year.

Costs	Dunk Tank	Prize Booth	Food Can Drive
Cost for 1 company employee	\$800	\$800	\$800
Salary for 2 local booth workers	\$320	\$320	\$320
Cost to exhibit	\$700	\$1,000	\$200
Cost for giveaways	\$0	\$500	\$320
Cost for table and booth decor	\$2,500	\$300	\$0
Cost for shipping	\$150	\$300	\$0
Total Cost	\$4,470	\$3,220	\$1,640

MK Exhibit 8: Guerrilla Marketing Costs

Collaborating with Social Media Influencers to Promote Impact+ to a Large Following

We believe that influencer marketing will help us amplify brand awareness and reach out to target audiences. Across all five years, our team plans to utilize social media influencers to promote Impact+ to consumers in our target market. They are influencers of popular athletes playing sports that Impact+ aims to target: football, lacrosse, softball, volleyball, and baseball. We have one Nano and two Micro influencers in Year 1 and 2. We begin to spend more from Year 3 and raise more awareness by adding more Mid-tier influencers, such as Lexi Sun (@lexiisun). In Year 5, we choose Jes Bowen (@jb_figure) as our macro influencer – a fitness mom influencer with two kids, who are also very athletic. As a result of this, we will raise awareness by 4.50% (see *MK Exhibit 9: Influencer Marketing Table*). To mitigate the risk of influencers inadequately promoting our products through posts, we will create clear contracts to ensure we generate sufficient awareness.

Year	Influencer	Followers	Influencer Type	Total Cost	Awareness
1	@penajosh13 @thenastynate54 @steve_lion_physique	5K 16.7K 16.9K	Nano Micro Micro	\$3,000	0.55%
2	@cparran_fitmom @adelaide.h3 @kaitlynwalshhh	5.8K 34.9K 42.1K	Nano Micro Micro	\$3,000	0.55%
3	@adrianmartinez.2 @lexiisun	43.4K 82.4K	Micro Mid-tier	\$3,750	1.00%
4	@deriqking @charlottenorth8 @sam7howell @momswearheels	42.7K 46.6K 65.4K 68.2K	Micro Micro Mid-tier Mid-tier	\$7,500	2.00%
5	@msboston @jb_figure	77.3K 528K	Mid-tier Macro	\$27,500	4.50%

MK Exhibit 9: Influencer Marketing Descriptors

Spreading the Word of Impact+ to Generate Growth of Awareness in the First 5 Years

Across all five years, our team plans to continuously spread our brand by word of mouth to friends and families, as well as through mutual connections. We anticipate that by spreading through word of mouth, we will catalyze a positive chain reaction in promoting Impact+ to greater consumers in our target market.

Impact+ is a semi-public product, which implies that it is frequently seen and discussed by consumers. Considering that 50% of the buyers generate enough impressions to make 3 potential buyers aware, our word of mouth will generate 0.2% awareness in Year 2 and 0.93% by Year 5.

Push Marketing

Appearing in Trade Shows to Promote Impact+ and Allow Consumers to Test it Out

Trade shows provide us opportunities to demonstrate our product to that target audience and make connections with other companies in the fitness industry. IDEA World Convention in Las Vegas is a conference of fitness and wellness companies. Companies from all over the world come to promote their products and share ideas with fitness professionals. This is held for 4 days in July. At the end of the year, we attend the Boston Mania Tradeshow which is held for 3 days in December. The attendees of Boston Mania are sponsors who are interested in the fitness industry or athletic customers who wish to explore the latest fitness products. Trade shows cost money to attend and set up a booth. While these events are too short and limited to exposure to generate awareness, they do offer valuable insights into innovation within the sports equipment industry. (See *MK Appendix 9: Impact + Convention Booth Creative*).

Pushing Trade Magazines to Professional Athletes in Peak Months

As we participate in different events and trade shows, we also aim to publish trade magazine advertisements to target any customers and investors who are interested in our product. National Fitness Trade Journal is geared to the owners of fitness centers and professional athletes. They usually cover wellness centers, athletic clubs, country clubs, strength coaches for all universities, and all professional sports teams as well.²⁶ This will help us introduce our product to professionals and experts. From Year 1 to Year 4, we plan to push full page ads in January, April, July, October and December, which are peak months of sports seasons, to get a better understanding of consumer interest within the sports equipment industry.

(See *MK Appendix 3: Integrated Marketing Communications Schedules Years 1-5* for a complete five year schedule.)

²⁶ “The Industry Guide for Fitness Facility Management,” Nationalfitnesstradejournal.com, accessed December 5, 2021, <https://www.nationalfitnesstradejournal.com/>.

Creative Elements

Considering Different Elements to Create our Logo and Slogan

The colors of our brand are red, black, and gray. We chose red as the logo color due to its representation and meaning of “passion, energy, action.” On another spectrum, the color black portrays “professionalism,” while the use of gray is used to neutralize the black and pop of the red. Our logo has the plus sign in the middle and circle symbolizing a target, which embodies the vision of our product and brand; aim towards a goal and improve your performance, in sports and in life. Logo fonts are bolded to show confidence and boldness of our brand characteristics. Our slogan “Practice, with Impact” means actual impact and significance. This message conveys that practicing with Impact+ can impact one’s athletic performance literally while enhancing their game.



MK Exhibit 10: Impact+ Logo and Slogan

Simple and Effective Packaging While Being Environmentally Conscious

Our packaging is a rectangular box with a handle on top for purchase and transportational convenience. The front of our packaging is a simple design consisting of images that clearly show what our product is and a straightforward product name. In the back of our packaging, we included a list of our product’s benefits and features for our consumers. To further elaborate on how our product works, we included an image that shows our product in use. On the backside of our packaging, we include our UPC code, as well as our social media handle for Instagram, Facebook, and Twitter. On the side of the box, we included the caption, “Recycle me,” as a call to action for our consumers to dispose of the box properly and safely for the environment.



MK Exhibit 11: Impact+ Packaging Creative

Taking Advantage of Ongoing Traffic to Capture the Eyes of Consumers

Displaying Impact+ on large billboards, such as along highways or buildings, will allow us to gain more attention from bypassers. Due to this image being in a high traffic area, we have designed the billboard to be simplistic, yet effective. The billboard shows Impact+ in action, with a girl practicing lacrosse against it. In large font, our product name and memorable slogan are visibly seen. Those who are interested and want to learn more about our product can do so by accessing our website or calling the provided number, which are both presented on the billboard (See *MK Appendix 4: Impact+ Billboard Creative*).

Utilizing a Playful Approach to Attract Readers

Our magazine ad takes a more simplistic approach that includes our product design – front and back – and our slogan as its main attraction point. Our slogan takes on a playful tone through its play on words. The slogan being, “Practice, with Impact+”, means to literally practice with impact but also, with us. To further elevate our magazine ad, we made sure to include “Sports improvement through data technology,” which tells our consumers our unique selling proposition against our competitors.



MK Exhibit 12: Impact+ Magazine Ad Creatives

Catching People on the Go with the Use of Bus Banners

Our bus banners are targeted to potential consumers who use public transportation, specifically buses in this example. As seen in both advertisements, we use “Off to practice?” phrase as a message to engage athletes and families of athletes riding on a bus. We felt like this message speaks to these groups who are using buses to travel to and from facilities to practice for their respective sport. As a brand, one of our differentiating principles is that the Impact+ product has the capabilities of a gym or athletic facility, and thus eliminates the need to travel altogether. The tennis banner demonstrates Impact+ in use, as the player is clearly using our product to her benefit. In contrast, the text banner is more simplistic and would function where advertising space is limited on the bus. Since the product is not shown, we would utilize this ad in Years 4 and 5 once we gain enough brand recognition that a picture is not necessary. In both banners, we call consumers to visit our website and purchase Impact+ by providing our website URL (See *MK Appendix 5: Impact+ Bus Banner Creatives*).

Aesthetically Pleasing Social Media Page that Captures Impact+’s Brand Image

We designed our social media presence, namely our Instagram page, as a way to engage consumers while also promoting our product. We decided on a very straightforward username

(@shopimpactplus), so we are easily searchable on Instagram. The “shop” in our handle lets users know that we are a business, rather than just a page promoting a product. Regarding specific details about the page, our logo functions perfectly as the profile picture since Instagram profile pictures are circular by design. Our slogan is included in the page’s biography, as well as a link to our website for ease of purchase. The feed itself is a combination of professional athletes – with red accents for brand consistency – and pictures of our product. In essence, our Instagram page delivers the message that if you want to achieve success, like these athletes, then buy Impact+ (See *MK Appendix 6: Impact+ Social Media Creative*).

User Friendly Website Allows Consumers to Find Information with Ease

Our website (www.impactplus.com) is designed with our three brand colors. The site is both visually pleasing and easy to navigate. Located on the page is a description introducing Impact+ and its distinguishing features. The “Contact us” tab on the bottom helps customers find our contact details and helps us to collect customers’ information. Those interested in purchasing are able to do so with ease. Clicking on the button provided, customers will be taken straight to Amazon where our product is available to purchase with a quick push (See *MK Appendix 7: Impact+ Website Creatives*).

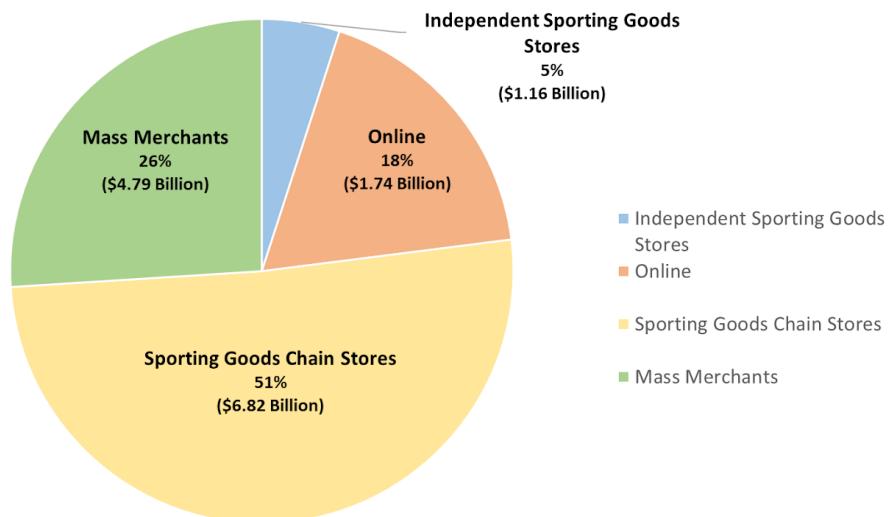
Utilizing Large Events to Further Boost Impact+

For one of our events, we plan to participate in the USA Lacrosse Convention. The event, which takes place in Baltimore, Maryland, brings together thousands of coaches, fans, officials, and players across the country. At the large arena, people are able to learn from the sports’ most influential leaders, get access to new lacrosse gear and tech, and more importantly, just share the love of the game. Participating in an event such as this one allows Impact+ to gain awareness and allow people to test out the product. From the event poster that our team has created, the public is able to see that our product will be present and available for testing (See *MK Appendix 8: Impact+ Event Poster Creative*).

Analyzing the Retail Environment to Determine Selling Strategy

Our profile of the retail environment emphasizes that the primary retailer for the sporting goods industry is through sporting goods chain stores such as Dick's Sporting Goods.²⁷ The least popular method of purchasing sporting equipment is through independent sporting goods stores. These stores do not hold the wide variety of equipment needed by a multi-sport household. Additionally, independent stores have the same equipment that chain stores and mass merchants have for a higher price due to their margins (See *MK Exhibit 13: Profile of the Retail Environment*).

U.S. Sports Equipment Market: Category Size \$14.5 Billion in Retail Sales, 2020



MK Exhibit 13: Profile of the Retail Environment

Selling Through Amazon, Independent Stores, Chain Retailers, and Mass Merchants

We are launching Impact+ in and around New Haven, Connecticut because the state has three of the best school districts for youth athletes in the country.²⁸ We believe that this will increase the likelihood of the city's residents to purchase our product.

²⁷ "Sporting Goods Retail Store Business Plan - Market Analysis Summary," Bplans, accessed December 5, 2021, <https://www.bplans.com/sporting-goods-retail-store-business-plan/market-analysis-summary/>.

²⁸ "2022 Best School Districts for Athletes in America," Niche, accessed December 5, 2021, <https://www.niche.com/k12/search/best-sports-school-districts/>.

For the first two years, we will be selling in independent retailers and online through Amazon. These independent retailers include Whitie Bensen Athletic Equipment, Connecticut Sporting Goods Co., and Hamden Sports Center. Online sales with Amazon may be higher for our product when compared to the overall sporting goods industry due to the sheer size of Impact+. With a weight totalling roughly 40 pounds and the mat being 4'x6', consumers may lean towards purchasing our product online and having it delivered straight to their home.

Starting in Year 3, we will begin to expand into chain retailers including Dick's Sporting Goods, Total Fitness Equipment, and Play it Again Sports. This move into chain retailers is a result of the increase in our awareness gathered from all the various mediums from our IMC Schedule.

Finally, in the fifth year of our operations, we will move into mass merchants. Specifically, the two mass merchants we are targeting are Target and Costco, as they possess a very large following and would be able to grow our exposure to the public (See *MK Exhibit 14: Channel Mix Schedule*). Additionally, Costco provides us the ability to have customers engage and experience Impact+ in person rather than blindly purchasing the product off of Amazon.

Channel	Years Utilized	Stores
Independent Retailers	Y1-5 Y1-5 Y1-5 Y1-5 Y3-5 Y3-5 Y3-5 Y3-5 Y3-5 Y3-5 Y3-5 Y3-5	<ul style="list-style-type: none"> ● Whitie Bensen Athletic Equipment ● Connecticut Sporting Goods Co. ● Hamden Sports Center ● Lynn's Sporting Goods ● Burghardt Sporting Goods ● Dunn's Sporting Goods ● Baker Pool & Fitness ● Stefans Soccer ● Hergert Sport Center ● The Buckeye Corner ● Rube Adler Sports
Online	Y1-5	<ul style="list-style-type: none"> ● Amazon
Chain Retailers	Y3-5 Y3-5 Y3-5	<ul style="list-style-type: none"> ● Dick's Sporting Goods ● Total Fitness Equipment ● Play it Again Sports
Mass Merchants	Y5 Y5	<ul style="list-style-type: none"> ● Target ● Costco

MK Exhibit 14: Channel Mix Schedule

Low Purchase Intent Based on Sample Feedback

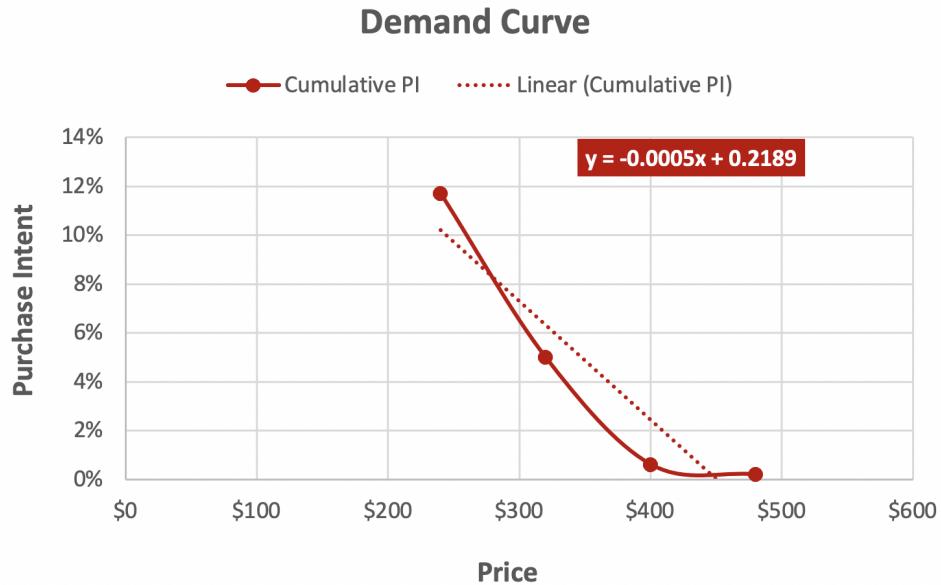
To measure the willingness to pay from customers, we constructed a survey questionnaire consisting of behavioral, psychographic, benefit, and demographic questions (see *New Product Questionnaire*). In total, we collected 208 survey responses, 118 of which were our target market. Out of these 118, 6% of respondents answered “definitely buy” and 25% of respondents answered “probably buy.” The price range between \$200-\$279 attracted the most votes (60%) (See *MK Exhibit 15: Price v. Purchase Intent*), indicating this as the highest willingness to pay. From this finding, we chose our target retail selling price to be \$220. Additionally, both of our CSR initiatives increased purchase intent by 3% collectively.

Expected RSP	Definitely Buy	Probably Buy	Total
Between \$200-\$279	4%	3	26%
Between \$280-\$359	15%	4	19%
Between \$360-\$439	0%	-	25%
Between \$440-\$519	0%	-	2
Between \$520-\$599	0%	-	17%
Total	6%	7	29
			100%
			36

MK Exhibit 15: Price vs. Purchase Intent

Increasing Our Market Share Through Revenue Maximization

Impact+ chose to begin with a revenue maximizing price strategy because we believe that as a start-up company, our best initial approach is to increase our customer base as much as possible. As a start up, utilizing a profit maximizing price strategy places a short term profit as its objective. We aim to maximize our revenues to increase our market share, which will generate a growing reputation in the market and a good brand name. We then plan to shift to a profit maximizing price strategy after cutting down our expenses and looking at other areas to improve. Further, our revenue maximizing price of \$220 creates a higher purchase intent among consumers than our profit maximizing price of \$260 (See *MK Exhibit 16: Demand Curve*).



MK Exhibit 16: Demand Curve

	Y1	Y2	Y3	Y4	Y5
Units Sold Per Channel					
Independent retailers	1,467	3,533	7,848	7,363	16,650
Online (Amazon)	19,073	26,498	51,013	40,494	41,626
Chain Retailers			27,469	51,538	45,789
Mass Merchants					33,301
Total Units Sold	20,540	30,031	86,330	99,395	137,366
Retail Margin per Channel					
Independent retailers	50%	50%	50%	50%	50%
Online (Amazon)	40%	40%	40%	40%	40%
Chain Retailers			45%	45%	45%
Mass Merchants					40%
Retail Selling Price (RSP) per Channel					
Independent retailers	\$244.00	\$244.00	\$244.00	\$244.00	\$244.00
Online (Amazon)	\$221.50	\$221.50	\$221.50	\$221.50	\$202.90
Chain Retailers			\$221.50	\$221.50	\$221.50
Mass Merchants					\$202.90
Total					
Manufacturers Selling Price (MSP) per Channel					
Independent retailers	\$122.00	\$122.00	\$122.00	\$122.00	\$122.00
Online (Amazon)	\$132.90	\$132.90	\$132.90	\$132.90	\$121.74
Chain Retailers			\$121.83	\$121.83	\$121.83
Mass Merchants					\$121.74

MK Exhibit 17: Channel RSP and MSP

Forecasting Manufacturer Sales in the Bases Model from Years 1 Through 5

Understanding that our product is new and innovative in the sports industry, our team has decided to devise a revenue maximizing strategy. In doing so, our team has narrowed in on controlling the market and penetration pricing, rather than honing in on profit margins. In Year 1, Impact+ starts at a weighted retail selling price of \$223 and a weighted manufacturing price of \$132.12; however, by Year 5, those numbers decrease to \$214 and \$121.80 (See *MK Exhibit 17: Channel RSP and MSP*). This drop in price is due to the increase in demand from the introduction of chain retailers in Year 3 and mass merchants in Year 5.

Through our market research and analysis, our target market size is expected to slightly grow year to year. Along with that, our awareness and ACV will grow at a healthy rate to 29% and 33%, respectively. Our total units sold increases tremendously as we place our product in chain retailers and mass merchants. We want to highlight that the total units between Year 2 and 3 are projected to increase by 187%. Taking these numbers into account, our calculations show that Impact+ is projected to sell 137,355 units in Year 5, giving us a manufacturer's sales of about \$16.7 million (See *MK Exhibit 18: BASES Model*).

	Y1	Y2	Y3	Y4	Y5
Target Market Size	15,586,619	15,721,946	15,849,134	15,921,295	15,981,113
Adj. Purchase Intent	13.33%	13.28%	13.31%	13.33%	13.78%
Awareness	7.06%	8.46%	23.25%	24.78%	29.07%
ACV	14%	17%	22%	27%	33%
Units at Trial	1	1	1	1	1
Units before Comp.	20,540	30,031	107,913	141,992	211,332
Comp. Adjustment	0%	0%	20%	30%	35%
Total Units	20,540	30,031	86,330	99,395	137,366
Avg. Weighted RSP	\$223	\$224	\$224	\$223	\$214
Avg. Weighted MSP	\$132.12	\$131.62	\$128.39	\$126.35	\$121.80
Manufacturer Sales	\$2,713,731	\$3,952,645	\$11,083,527	\$12,558,504	\$16,731,134

MK Exhibit 18: BASES Model

Demand from Marketing Campaigns Informs Operations

Through our IMC Schedule (see *MK Appendix 3: Integrated Marketing Communications Schedules for Years 1 through 5*) Impact+ gains publicity as we go through our product life cycle. Eventually, this level of awareness translates over to our target market, who begin to purchase our product. Using the BASES case, we estimate the demand for our first five years of business. By having a rough idea of how many units we will be able to sell, our operations team figured out costs and the sourcing of raw materials. In the next section, stakeholders will see how Impact+ is built, what facility we will be producing it in, along with how we are partnering with suppliers based on our distinct standards.



Operations Management

Section 2

OPERATIONS MANAGEMENT

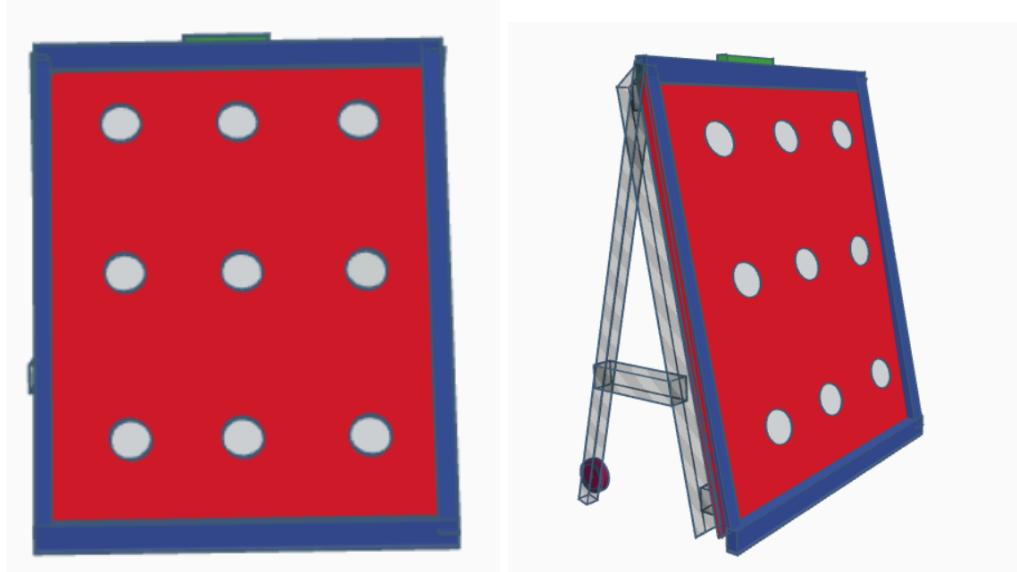
Operations Management Seeks To Match Capacity with Demand

Impact+ has kept our stakeholders in mind at every step of the process in the development of our operation plan. We are strategically partnering with dependable suppliers in order to source our raw materials to ensure that we are able to provide the quality that our market expects. For example, our manufacturing process alongside our inbound and outbound logistics are structured so that Impact+ is able to satisfy our forecasted demand as efficiently as possible. Additionally, our manufacturing facility and warehouse have been designed to help our workers work as effectively as possible.

Developing the Impact+ Product

From Ideation to Prototype: Our First Design using a CAD Model

We began our design process by creating a House of Quality (See *OM Appendix 1: House of Quality*) to weigh customer requirements against technical requirements. Once we understood what our customers sought in our product, we entered the brainstorming process to visualize the build of Impact+. We utilized computer aided design (CAD) software to model the details of our prototype, down to the minute details of our frame. Our CAD model below (See *OM Exhibit 1: Impact+ CAD Model*) allowed us to easily implement an iterative design and apply feedback changes from our surveys. Through this feedback, we were able to settle on our final design, finalize our bill of materials, and ultimately visualize the physical model of our product.



OM Exhibit 1: Impact+ CAD Model

Using the House of Quality to Help Influence Product Design

Our House of Quality represents the customer requirements of:

- Portability
- Durability
- Safety
- Size
- Data Display

These requirements have been determined as highly valuable to our customer prompting innovation on our side to satisfy the customer through our technical requirements. Specifically, we aim to address the customer requirement of durability, rated 5/5 on importance to customers. Thus, we decided to focus on the quality of materials and how they affect user environments.

We chose aluminum as the metal for the frame as it is corrosion and rust resistant, as well as waterproof, which ranked highest in terms of importance weighting. Knowing the importance of waterproofing as a tool to satisfy multiple customer requirements, our product design team began thinking about how to further incorporate waterproofing into our engineering. Due to this knowledge, we chose to incorporate a vinyl wrap for our foam board. The vinyl wrap works as a water-resistant protective layer shielding the sensors from water damage and environmental degradation. We are confident with the combination of aluminum for the frame and a vinyl

protective wrap to fulfill our customer needs. This ultimately surpasses the baseline requirement of durability.

In addition to durability, portability was rated 5/5 in terms of importance to the customer. Using similar logic, our product design team learned that not only is aluminum durable but also significantly lighter than other metals, increasing the portability of our product. For those in which carrying a lightweight product is still not considered portable, our design team believes the addition of wheels to the bottom of the frame will satisfy the customer requirement of portability.

The House of Quality serves as a guide for our product design team informing us what the customer requires of our product and how we can fulfill those needs through the innovation of our technical requirements (See *OM Appendix 1: House of Quality*).

House of Quality Informs Our Bill of Materials

The Impact+ is made from 8 different parts shown in OM Exhibit 2: Materials and Respective Supplier. Each part is carefully considered and chosen with quality as a top priority, satisfying the customer requirement of durability in the House of Quality (see *OM Appendix 1: House of Quality*). After researching a quality part, our product design team evaluates each supplier through our own rigorous research of past purchases and published independent reviews. Ultimately, our sourcing of quality materials from principled suppliers satisfies our customer requirements in the House of Quality.

Material	Supplier	Location	Price Per Unit
Foam	Dongguan Huihao Packing Material Co.	Guangdong, China	\$5.51
Battery	Dongguan Wiliyoung Electronics Co.	Guangdong, China	\$3.99
Sensors	Xi'an Sensors Co.	Shaanxi, China	\$0.98
Plywood	EZwoodshop	Iowa, United States	\$4.48
Aluminum Tube	Grainger	Illinois, United States	\$37.98
Radar Sensors	Shanghai TT Trading Co.	Shanghai, China	\$1.24
Vinyl Padding	Zhongcheng Building Materials Technology Co.	Guangdong, China	\$0.15
Wheels	Jiaxing Xingteng Caster Co.	Zhejiang, China	\$2.20

OM Exhibit 2: Materials and Respective Suppliers

Considering the Attributes of Our Global Supply Chain

Determining our Supply Chain Layout

The layout of our supply chain shows the movement of the seven major parts to construct Impact+, from raw material to finished goods. Six out of eight of these parts are produced in China and imported into our factory. First, the parts coming from China are shipped out of either the Shenzhen or Xi'an dock, and shipped 6,487 miles overseas to Los Angeles, CA. Then, the parts are sent 2,518 miles on rail lines to our Durham, NC factory to be assembled. Furthermore, the remaining two parts are produced near Durham and shipped directly to our factory.

At our production facility, we store the inputs and transform them into finished goods. Between Year 1 and Year 5, we will utilize different truckload (TL) shipping providers to reach our distribution channels.

The final step in our supply chain includes returns and defective products. These will be sent directly to our production facility and we will repurpose them to add to the production of new units, and promote sustainable engineering.

Suppliers Are Chosen Based on Specific Criteria

To determine the criteria to choose a supplier, we focused on three main categories including experience, quality vs. cost analysis, reliability and effective communication. More specifically, we settled on these specific criteria:

- Minimum 10 years experience
- 90% on-time delivery rate
- Fast response time based on reviews
- Bulk order pricing – less than \$6 per unit for everything except aluminum frame
- 25,000+ Transactions

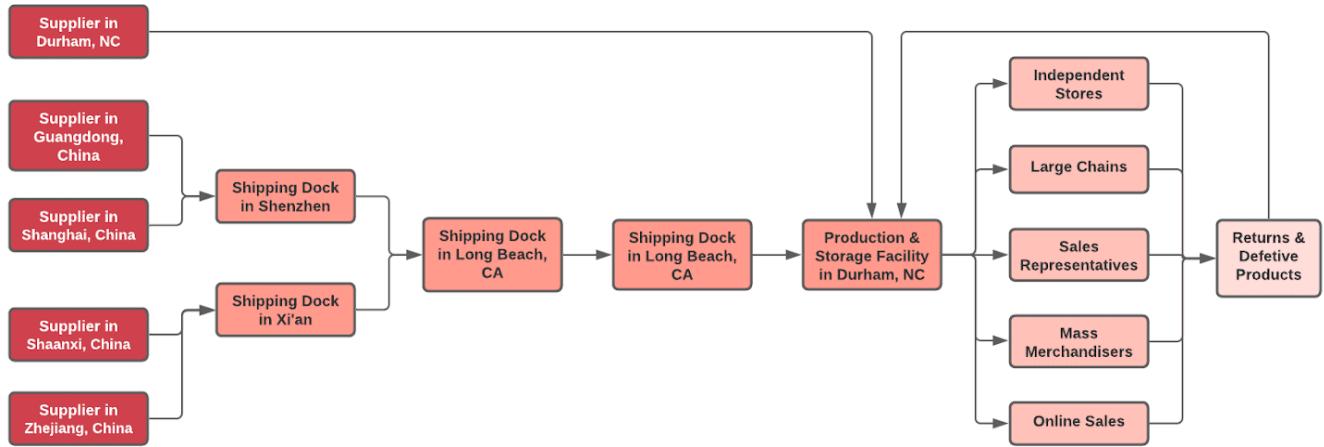
All of our suppliers met these criteria and fulfilled an optimal balance of quality and cost. Additionally, they were selected to fulfill our supply chain diversification strategy. As we expand operations, we will strive to maintain close business relationships with all our suppliers to ensure the highest levels of quality and mitigate against the long lead times from China, especially as we continue to face global disruptions due to the COVID-19 pandemic.

Part	Supplier	Location	Criteria
Foam & Battery	Dongguan Huihao Packing Material Co., Ltd	Guangdong, China and leaves the port of Shenzhen, China	<ul style="list-style-type: none"> • 16 years of experience • 10 years as a Alibaba Gold Plus Supplier • 95% on-time delivery rate • Offers bulk order discounts
Sensors	Xi'an Sensors Co., Ltd.	Shaanxi, China and leave the port of Xi'an, China	<ul style="list-style-type: none"> • 10 years of experience • 100% on-time delivery rate • 100,000+ transactions • Offers bulk order discounts
Plywood & Frame	The Hardwood Store of North Carolina	Durham, NC	<ul style="list-style-type: none"> • Proximity to our factory • Offers bulk order discounts
Radar Sensors	Shanghai TT Trading Co., Limited	Shanghai, China and leave the port of Shenzhen, China	<ul style="list-style-type: none"> • 15 years of experience • 10 years cooperating with international customers • Quality after-sale service • Offers bulk order discounts
Vinyl Padding	Zhongcheng Building Materials Technology (Guangzhou) Co., Ltd.	Guangdong, China and leaves the port of Shenzhen, China	<ul style="list-style-type: none"> • 5,000+ transactions • 100% on-time delivery rate • Offers bulk order discounts
Wheels	Jiaxing Xingteng Caster Co., Ltd.	Zhejiang, China and leaves the port of Xi'an, China	<ul style="list-style-type: none"> • 25 years of experience • 100% on-time delivery rate • Offers bulk order discounts

OM Exhibit 3: Breakdown of Supplier Audit

Make-Buy Analysis: Outsourcing All Inputs and Assembling In-House to Reduce Costs

Given that Impact+ requires various technical parts to function in its most basic capacity, we decided to outsource all of our raw materials and inputs. The advantage of this decision is that we outsource technical production knowledge as well as reduce cost by shipping the majority of our parts from a variety of suppliers in China. On the other hand, this slightly increases inbound shipping costs and makes us more vulnerable to supply chain disruptions as opposed to sourcing domestically. Thus, we decided to source our metal and wood from US suppliers and ship from two separate docks in China to diversify our supply chain and hedge against this risk. Overall, it is financially and operationally optimal to outsource raw materials inputs, and assemble everything in our factory.



OM Exhibit 4: Supply Chain

Locating Production in Durham, North Carolina to Reach Labor and Target Market

To determine which state we wanted to be headquartered in, we used a weighted factor analysis to guide us based on our priorities. Our two main priorities were proximity to our target market and access to an inexpensive and quality labor pool. We are aiming to be close to our target market in the East Coast, in order to develop closer relationships with our consumers and be able to interact with them more frequently. Therefore, it was weighted the highest. Then, the next variable of interest was labor because we are highly affected by its variable cost and the supply of workers available in the post-pandemic era. Thus, we applied our factor analysis to a variety of cities that have a business friendly reputation. In the end, we found Durham, NC as our ideal location (See *OM Exhibit 5: Factor Rating Method Location Analysis*).

With our general location in mind we began our Center of Gravity Analysis. We want to be close to Durham and Charlotte for proximity to our workers and transportation infrastructure. We also considered being close to a well known university in order to attract high quality talent to fill our administrative positions. Lastly, we also wanted to consider the distance from major sport organizations, like USA Baseball and USA Lacrosse, that would allow us to work with them to promote our product (See *OM Exhibit 6: Center of Gravity Method Location Analysis*).

Factor Rating Method

Factor Analysis	Weight	Kansas City, MO	Columbus, OH	Phoenix, AZ	Houston, TX	Durham, NC
Distance from Target Market	0.4	80	90	80	80	95
Labor	0.3	93	85	75	85	80
Infrastructure	0.2	75	87	80	95	90
Education	0.1	75	85	70	95	90
Weighted Score	1	82.4	87.4	77.5	86	89

OM Exhibit 5: Factor Rating Method Location Analysis

Center of Gravity Analysis

Center of Gravity Analysis	Latitude	Longitude	Weight	Weighted Latitude	Weighted Longitude
Port of Los Angeles	33.7406	118.2816	1%	0.337406	1.182816
USA Lacrosse HQ	39.5213	76.6449	7%	2.766491	5.365143
USA Baseball HQ	35.7968	78.8923	7%	2.505776	5.522461
Charlotte, NC	35.2271	80.8431	15%	5.284065	12.126465
Durham, NC	35.994	78.8986	60%	21.5964	47.33916
Duke University	36.0014	78.9382	10%	3.60014	7.89382
Predicted Location: Burlington, NC			100%	36.090278 N	79.429865 W

OM Exhibit 6: Center of Gravity Method Location Analysis

Productions Process for Effective Operations

The first task in our process flow is to check the raw materials when the work day begins. If we were to immediately begin building units, there is a chance that our shipment of inbound materials could have defects which would affect the finished product. We want to ensure that when customers receive Impact+, the item meets quality standards and satisfies expectations.

Tasks 2 to 6 involve assembling the components of Impact+ and making sure that all the parts are completed correctly. The second task is our bottleneck as the process relies on the workers to use machinery to cut and mold the raw aluminum into shapes that are suitable for the frame. In Task 7, all these parts are placed together in our packaging and passed off to the Finished Goods section of our facility. This task goes hand in hand with our final quality

inspection. Periodically throughout the day, units will be taken from Task 7 and the various parts will be tested to check quality once they have gone through all the necessary work stations. If the quality is satisfactory, the item will go back to finished goods; however, if it does not pass this check, the parts will be scrapped or salvaged depending on their condition (See *OM Exhibit 8: Process Flow Diagram*).

Capacity Metric	Y0	Y1	Y2	Y3	Y4	Y5
Design units /day	128	128	192	448	512	704
Effective units /day	109	109	163	381	435	598
Efficiency	76%	76%	74%	91%	91%	92%
Utilization	64%	64%	63%	77%	78%	78%

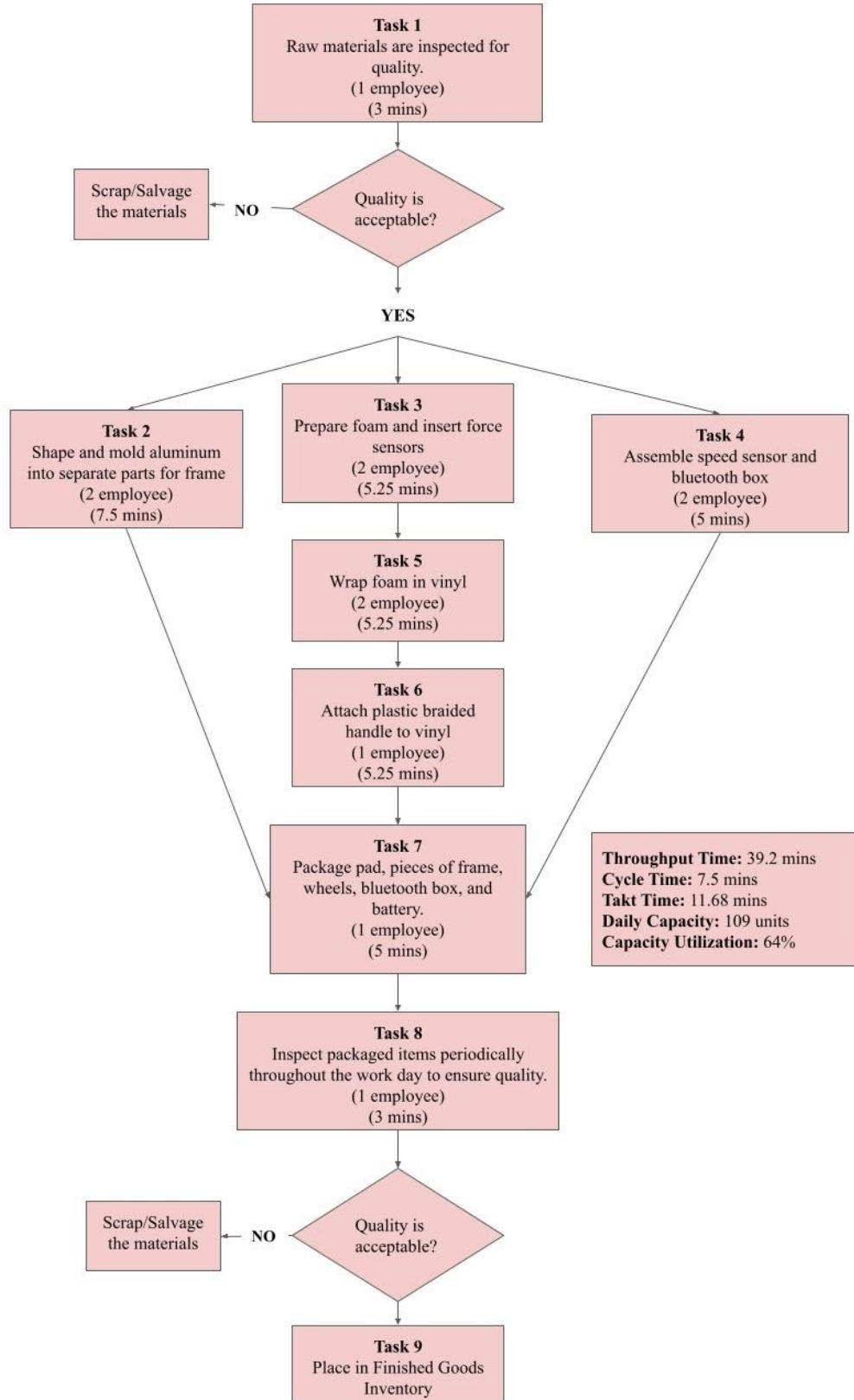
OM Exhibit 7: Workplace Capacity

Establishing Efficient Production Processes that Maximize Quality

Our design capacity is dependent on the cycle time of our bottleneck activity, which is our Task 2. To increase the design capacity of our factory, we plan to add more workstations towards the bottleneck. We increase our design capacity over two-fold due to our massive increase in demand in Year 3 as we enter the growth phase of our product life cycle. After Year 3 we would continue to increase our design capacity to keep up with demand, but at a slower rate compared to Year 3.

We assume our effective capacity will be 85% of our design capacity to allow for inefficiencies that could occur. Due to this assumption, we have a relatively large variation between our capacity utilization and efficiency. Therefore, when analyzing our capacity we would prefer to focus on capacity efficiency. Our capacity efficiency is much lower in Year 1 and 2 to allow more leeway when issues occur in production. However, in Year 3 our capacity efficiency jumps from 74% to 91%. While this large increase in efficiency may seem negative due to how close we are to our max capacity, we believe this increase in efficiency is beneficial and logical. As we mature as a company and our operations become more efficient, we aim to decrease leeway in order to decrease our idle time to lower our costs per unit. Cutting costs are

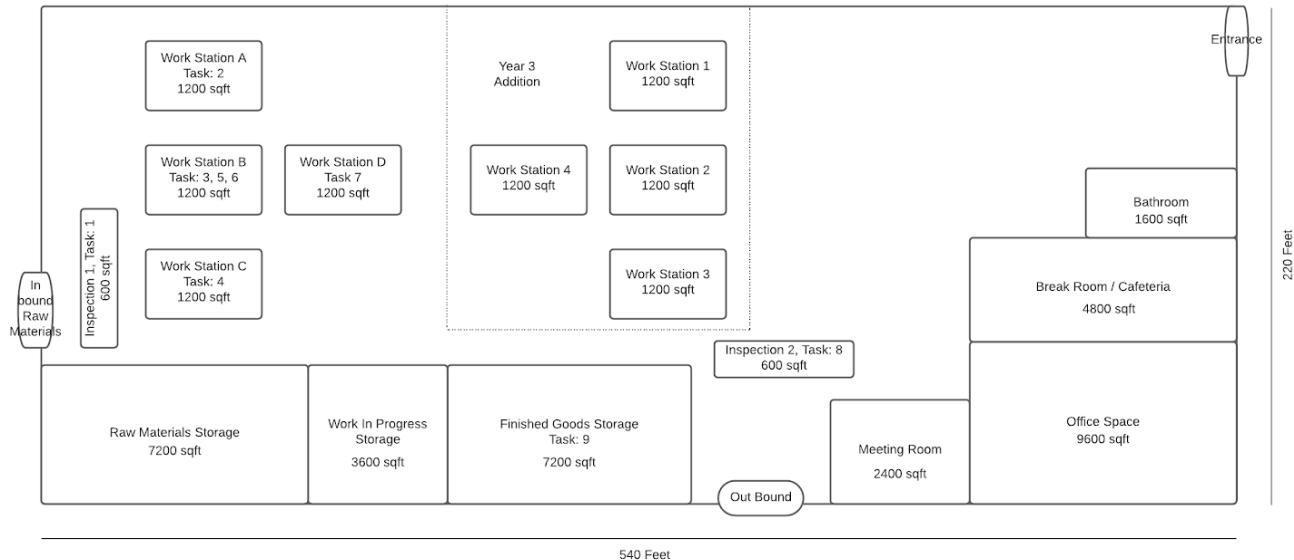
crucial for us to be able to effectively sell our product in larger retailers like Dick's Sporting Goods and Costco.



OM Exhibit 8: Process Flow Diagram

Innovative Layout Allows for an Organized and Efficient Facility

Our warehouse will be located on 224 E Main St near Durham, NC.²⁹



OM Exhibit 9: Warehouse Facility Layout

After designing our Operations Production Process (see *OM Exhibit 8: Process Flow Diagram*), we specified the layout of our production and storage facility in Durham, NC. We decided to divide the warehouse into three main areas, namely: the production line, the storage area, and the administrative section. This optimizes the synergies within and across departments, because each department is centralized in one location and their communication is as effective as possible. Moreover, the fact that all departments surround the production line enhances collaboration and the knowledge of the entire assembly line, which is crucial for all employees.

Additionally, our three storage spaces allow for items to be introduced from the production line, but also allows workers to move storage units between each section directly. This optimizes our production process and reduces the time required for internal material displacement. Finally, we maintain maximum distance between the worker entrance and raw materials entrance, to prevent any logistics hold-ups and streamline the reception of our inputs.

Analyzing our internal operations production process, we begin as inbound raw materials enter the factory, where they are immediately inspected and later split into Work Station A, B,

²⁹ “224 e Main St, Haw River, NC 27258 - Confluence Warehouse,” LoopNet, accessed December 5, 2021, <https://www.loopnet.com/Listing/224-E-Main-St-Haw-River-NC/19186542/>.

and C; or our adjacent Raw Materials Storage space as needed. Raw materials are transformed into intermediary inputs and are later assembled jointly in Work Station D. Consequently, they undergo a periodic final inspection before they are placed in the Finished Goods Storage space, which has a clear and direct route to the exit of our factory. Later, in Year 3 we will duplicate all 4 Work Stations to be able to accommodate our increase in demand and ensure our idle time is maximally reduced.

Inventory Management as a Form of Risk Mitigation

We specifically selected suppliers with enough productive capacity to fulfill our Economic Order Quantity (EOQ) for raw materials which begins at 290 units and scales to 783 units in Year 5. Our supply time is three months meaning we reorder four times per year. Moreover, our service level of 95% highlights we will only run out of inventory 5% of the time. Overall, we plan to order enough raw materials to comfortably fulfill our quarterly demand requirements and will order in bulk to reduce inbound freight costs, as the cost per shipment increases from \$512 in Year 1 to \$3,434 in Year 5.

For work in process inventory, we will invest \$113,000 in an ERP system during our startup year and pay an average of \$35,000 per year thereafter, to set the groundwork for our lean manufacturing processes. Despite the notable initial investment, we strongly believe this will ensure we can keep track of our raw material, work in process, and finished goods effectively. Moreover, we believe the job of factory workers and operations managers will be much more effective as they will not have to worry about having updated information to make accurate decisions. Overall, this ERP system will allow us to reduce the cost of low yield, unnecessary scrap rates, and inform all major business decisions within the firm due to having access to up-to-date information on our entire production line.

Our finished goods inventory found below, has comparatively low cycle stock units for Years 1 and 2, 223 units and 325 units respectively. Furthermore, given our supply time of 3 months, and early establishment of lean production processes, we will be ordering raw materials frequently during the initial years of production. Later, between Years 3 and 5, our cycle stock increases to keep pace with an increase in demand as well as our increased distribution channels, including mass retailers and large chains. Our safety stock increases exponentially as our cycle stock increases to accommodate the increased inventory requirements for these large retailers

and ensure we do not have any supply issues. Overall, this pronounced divergence between safety stock and cycle stock adds downward pressure to our cash flows and increases our inventory costs; however, we ensure that we maintain functioning relationships with our retailing partners. Finally, this ensures our demand remains high and we continue to penetrate new market segments.

Year 1								
	Raw Materials		WIP		Finished Goods		Total Inventory	
	Units	\$	Units	\$	Units	\$	Units	\$
Avg. Cycle Stock	145	\$9,410	445	\$30,188	223	\$15,732	812	\$55,330
Avg. Safety Stock	6,979	\$453,428			1,647	\$116,421	8,626	\$569,850
Total Inventory	7,124	\$462,839	445	\$30,188	1,869	\$132,153	9,438	\$625,180

Year 5								
	Raw Materials		WIP		Finished Goods		Total Inventory	
	Units	\$	Units	\$	Units	\$	Units	\$
Avg. Cycle Stock	392	\$23,470	2,976	\$185,410	1,488	\$96,236	4,856	\$305,117
Avg. Safety Stock	42,362.85	\$2,538,518			11,066	\$715,651	53,429	\$3,254,169
Total Inventory	42,755	\$2,561,989	2,976	\$185,410	12,554	\$811,887	58,285	\$3,559,286

OM Exhibit 10: Inventory Summary for Years 1 and 5

Aggregate Plan Weighs Seasonal Demand

Impact+ is a product in the sporting goods industry which is targeting youth athletes. Through interviewing industry experts at sporting goods chain stores, we discovered that most sales are made in the fall when back to school season is at its peak. As a result, we forecasted that August and September will require higher production levels. We also believe that more units should be allocated for March to May since that is the season for many sports which Impact+ may be utilized for sports such as baseball and soccer. Additionally, part of our target market includes grandparents who are more likely to purchase the product for their grandchildren around

the holidays. This is why we will have more units in stock and increase production during the months of November and December.

With the need for more units in these select months, we will adopt a chase strategy in April, August, September, November, and December to meet the demand. In the off-season months where we do not need to stock up, we will stick to a level strategy of production.

In terms of our labor plan, we decided to not hire subcontractors for our product because there are no special technical skills that our workers would need prior to joining our operations. We also opted out of hiring part-time workers because we are able to produce enough units of Impact+ solely through overtime during the peak months. This means that we can reach our consumer demand without needing to pay the premium for the part-time workers. (see *OM Appendix 2: Aggregate Planning Hybrid Strategies for Year 1 and 5*)

Inbound Freight Costs are Minimized Through Bulk Orders of Raw Materials

From the materials sourced domestically, our suppliers included the shipping fees within the costs based on the volume we are requesting. For the materials that are being sent from China, (foam, batteries, pressure sensors, radar sensors, and vinyl padding) we have estimated the costs to be roughly \$0.56/unit in our first year of operations and will increase to \$1.95/unit in our fifth year due to an increase in production; thus, more raw materials are required (See *OM Appendix 4: Inbound Freight Year 1 to 5*). We will continue to order our materials quarterly to meet demand and manage our safety stock.

Outbound Freight Costs Increase as We Expand to More Channels

For our outbound logistics, we identified 19 different distribution centers and independent stores that we will be shipping our product to. For online distributors (Amazon) we will be utilizing two distribution centers which are both in Charlotte, NC.³⁰ We have identified three independent sporting goods stores near New Haven, CT and we will use truckload shipping to fulfill orders. We will be using these two channels for the first five years.

³⁰ Hank Lee, “Amazon Announces New Fulfilment Center, Delivery Stations Coming to Charlotte,” wcnc.com, April 19, 2021, <https://www.wcnc.com/article/money/business/amazon-fulfillment-center-charlotte-north-carolina/275-c978ed35-7237-4dac-a675-c9c34bd4c51c>.

Starting in Year 3, Impact+ will expand to sporting goods chain stores which will be using five distribution centers to cover the entire U.S. We are focusing more on the East Coast due to the location of our warehouse in Durham, NC. These distribution centers include the states of Georgia, New York, Arizona, Indiana, and Pennsylvania. We are using the average total miles (834 miles) from our warehouse to the distribution centers when calculating our order fulfillment costs. In Year 5, our company will move into mass merchants, namely Target³¹ and Costco.³² There are a total of nine distribution centers between these two retailers again, in states across the U.S. but focusing on the East Coast and Midwest. The average miles for mass merchants comes out to 945 miles. (see *OM Appendix 3: Outbound Freight Year 1 to 5*)

Based on research, we found that the average cost for one ton per mile traveling by trucks comes out to \$0.156.³³ From here, by allocating the total units needed for each channel, we deduced our total outbound shipping costs for Year 1 to be around \$13,500. By Year 5, these costs ramp up to nearly \$300,000 due to the volume and the number of distribution centers that we need to reach.

Customer Expectations Achieved Through Quality Control

Potential consumers of Impact+ will judge quality primarily based on performance, features, reliability, and durability. This was gathered through our consumer insight interviews. When asked about how the consumers go about making a decision on purchasing new sporting equipment, the words durability and reliability came up extremely often. It is evident that people want their sporting equipment to stay intact and remain functional for a long time.

More specifically, consumers of Impact+ will measure performance based on whether or not the pressure sensors, radar sensor, and battery function correctly. Looking at features, we can identify the wheels that provide increased portability, the data analytics that allows the user to track their performance. Speaking for reliability, customers would prefer that Impact+ require as

³¹ “Distribution Center Hourly Jobs,” Target Careers, accessed December 5, 2021, <https://jobs.target.com/category/distribution-center-hourly-jobs/1118/11134/1>.

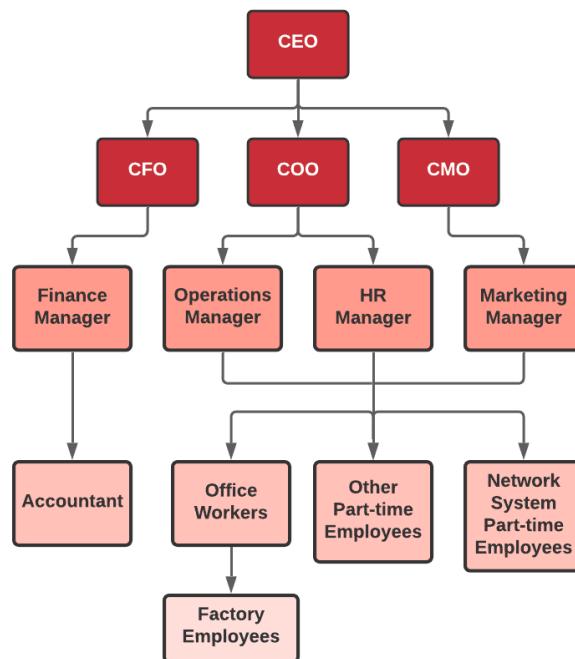
³² “Costco Distribution Center Jobs,” Distribution Center Jobs, accessed December 5, 2021, <http://distributioncenterjobs.net/dc/costco-distribution-center-jobs/>.

³³ David Austin, “Pricing Freight Transport to Account for External Costs,” Congressional Budget Office, March 2015, https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/workingpaper/50049-Freight_Transport_Working_Paper-2.pdf, 2.

little maintenance over its usable years. The desire for durability means that our product will need to withstand various levels of force as well as different weather conditions.

In order to uphold these expectations of quality that our consumers have, we plan to implement two quality checks throughout our production process. The first check will be when we receive our raw materials. We will inspect 5% of all incoming materials to ensure that we can proceed with production without any issues. Our other quality check will occur by testing 5% of all finished goods. Impact+'s goal is to have continuous growth in the quality of our product by providing in-depth training to our employees. As demand and production increases, employees will gain greater experience and knowledge on how to complete their tasks most efficiently while maintaining high quality work.

Establishing a Management Structure to Optimize Collaboration and Innovation



OM Exhibit 11: Organizational Hierarchy

In the startup year, given our demand only increased to 20,540 units by Year 1, we decided to hire a total of 16 employees, namely: one CEO, three office workers, one part-time network system supervisor and 11 factory workers. Then, throughout Year 1 we hire an additional 4 employees: one COO, one CMO, one HR Manager, and one Accountant. Overall,

this is the minimum number of employees necessary to meet our demand requirements while reducing initial startup costs. Moreover, this gives us the flexibility to create lean operational processes that can scale effectively, and maintain satisfactory capacity levels without needless manufacturing overhead. Initially, we will hire one CEO and strategically add c-suite executives to build and maintain a coherent vision for the company, as well as ensure our initial years are characterized by consistent quality standards and stable executive directions within the factory.

As we expand operations between Year 1 and Year 5, we plan to increase our hiring of salaried, hourly workers. In Years 0-2, the CEO will be responsible for the overall company processes and standards by building them in the first year of operation. Additionally, they will be in charge of communications with investors and potential business partners. The COO will organize operational processes, such as logistics and production within the factory as well as all factory workers and work closely with our OM Manager to implement these decisions. Plus, they will work closely with the HR Manager to deal with employee complaints and team morale issues. Moreover, the CMO is responsible for implementing the IMC and tracking the results of all our marketing campaigns in collaboration with the office workers. Finally, the FE Manager and Accountant will ensure all financial statements are updated quarterly and in compliance with public regulations.

In Years 3-5, we will add a CFO which will head the financial department as we increase our production and our statements become more extensive, given our increasingly complicated business partners and distribution channels. Additionally, we will hire an MK Manager to assist the CMO in increasing our awareness as we expand into chain stores and implement outdoor advertising efforts.

All employees' pay will increase by 3% every year to keep up with inflation, benefits will account for 30% of their salaries, and part-time work will be remunerated at \$2.00/hour.

Salaried Position	Annual Salary	Hourly Position	Hourly Salary
CEO	\$110,000	FE Manager	\$32
CFO	\$100,000	HR Manager	\$28
COO	\$100,000	OM Manager	\$32
CMO	\$100,000	MK Manager	\$32

Part-time Systems and Network Admin	\$12,000	Accountant	\$30
		Office Workers	\$15

OM Exhibit 12: Salaries

Our Operations Management Focuses on Reliability and Efficiency

From listening to customer demands predicted from research conducted in MK, our team set a target price and implemented a target costing analysis. These executions aid to develop a product that is not only cost effective, but also upholds our customer requirements. To stand right by our customers, we ensure that Impact+ is designed with materials that come from responsible sources. Mitigating supply chain risks is one of our top priorities, and we plan on doing so by making sure that a portion of our materials are sourced close to our factory. Another strategy we utilize to minimize this risk is having a high safety level, which ensures that we do not stock out in case supply chain issues occur.

Establishing a factory region suitable for Impact+ is essential for the business to prosper. In order to do this, our team used a location and factor analysis, which ultimately led us to Durham, NC. This location gives Impact+ a competitive advantage, for it is close to our target market audience and grants us access to a high supply of skilled workers. Our production process has been thought out so that our workers can assemble the Impact+ pads in the most efficient manner possible. Our effective and efficient processes do not skimp out on quality. The team will set aside time to inspect raw materials and finished goods, making sure that our customers will receive nothing but the best.

This process is best understood through our change in capacity efficiency over the years. In Year 1 and 2, our capacity efficiency lies around 75%. This optimal rate leaves our operations with margins of leeway in the event a problem occurs. By Year 3, our operations will grow to become more reliable, allowing us to increase our capacity efficiency to above 90%. This alteration cuts out idle time and decreases expense per unit, which helps sell Impact+ in channels that require lower retail selling prices. By becoming more efficient in our productions, cost per unit is reduced and reflects a positive impact in our income statement.



Financial Analysis

Section 3

FINANCIAL ANALYSIS

In this part of the business plan, we would like to provide an in-depth analysis on our funding, financial statements, product life cycle, and our financial forecast compared to the industry. Through our calculations we would have an IRR of 25.73% and an NPV of \$772,032 (See *FE Appendix 5: Cash Flows Statement*) if the project were to be carried out. Based on our findings, we believe that Impact+ is a worthwhile investment.

\$1.3 Million of Capital is Required for Three Preparation Months Prior to Launch

In order to launch Impact+, we plan to take three months to set up the facilities, equipment purchases, and additional preparation, which make our start-up costs \$1,328,000 (See *FE Appendix 1: Start-up Expenses Breakdown*). These costs include our fixed assets, working capital, and operating expenses.

Initial Fixed Assets Should be Foremost Prepared Before Other Set-ups in the Period

Our biggest investment in fixed assets is our plant: a 30,000 square feet warehouse located in Durham, NC. As our launch is in August, the build-out begins in May and should be completed by June 10th at the latest. We expect to spend \$47,975 on long-term equipment such as forklifts and band saws to outfit our facility (See *FE Appendix 1: Start-up Expenses Breakdown*). In addition, we plan to facilitate operations with an initial investment of \$19,100 in hardware, organizational phones, and security cameras to lay the foundation for the administrative tasks (See *FE Appendix 1: Start-up Expenses Breakdown*). This initial investment in fixed assets totals \$567,720, including the following long-term balance sheet items that can be depreciated:

1. Plant build-up costs
2. Equipments
3. Leasehold improvements³⁴
4. IS Equipments (including all hardware, organizational phones, and security cameras)

³⁴ “What Is an Average Commercial Building Cost per Square Foot?,” BuildingsGuide, October 30, 2021, <https://www.buildingsguide.com/faq/what-average-commercial-building-cost-square-foot/>.

Our Initial Working Capital Covers Start-up Costs and Emergency Funds

The initial working capital is worth \$249,558 which includes cash, raw materials, work in process, as well as our start-up period's finished goods (See *FE Appendix 1: Start-up Expenses Breakdown*).

1. As the start-up preparation time is three months, the Start-up Raw Materials and Work in Process (WIP) are prepared at a quarter of their respective Year 1's projections, and the same is applied for Finished Goods in this period. When our facilities are set up and ready by early July, raw materials are the next requirement for the first orders. This will result in approximately \$156,295 worth of inventory in total. Our safety stock production in the startup period will help mitigate risk of stock-out.
2. The additional cash of \$93,263 required in addition to the start-up costs is equivalent to one month of the forecasted total first year's Selling, General, and Administrative (SG&A) expenses. This reservation is allocated in case of emergency, accidents, or other cost fluctuations due to various risks that may occur unpredictably.

Other Initial Operating Expenses are also Required in Support to Preparation

The last portion of the funding in start-up period is initial operating expenses with a tally of \$510,723 in which its breakdown can be summarized as:

1. Prototyping and Research & Development (R&D): We will construct test runs of the production site three months in advance to the official rollout. In order to prepare for the initial working capital, conducting a precise prototype along with professional consultation from the engineers and an external R&D outsourcing. The estimation of this budget would be \$100,000 as it is referenced from Pacific Research Laboratories Inc.³⁵
2. Pre-marketing expenses: Our marketing activities that run before our August 1st launch date are counted as pre-marketing expenses, estimated to be 15% of total marketing expenses in Year 1. According to the research from our marketing team, we believe the \$18,619 budgeted for the start-up period is sufficient for the cost of consumer data and market analysis. These pre-marketing expenses are crucial to ensuring the success of our product.

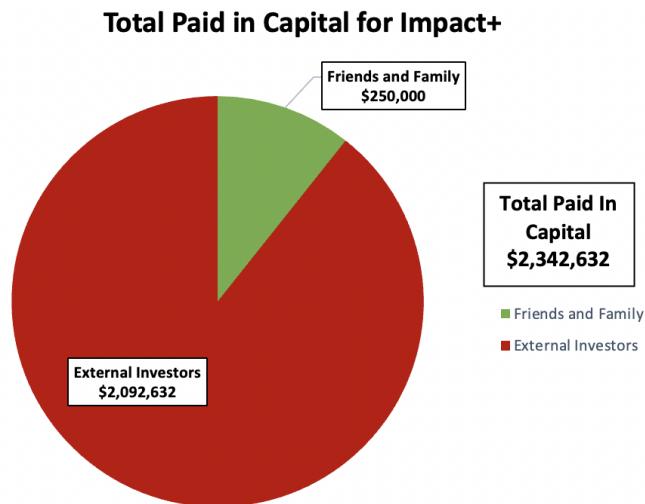
³⁵ "What Is the Cost of Product Development?," Pacific Research Laboratories Inc., September 8, 2020, <https://www.pacific-research.com/what-is-the-cost-of-product-development-prl/>.

3. Other miscellaneous non-depreciated expenses (see *FE Appendix 1: Start-up Expenses Breakdown*): The hiring and training of three fixed administrative employees along with our CEO will happen simultaneously from mid-May until mid-July in preparation for official operation. This period is defined as 62.5 days which stands for one-fourth of the 250 working days in a year, with a standard 8 hours per day, ultimately costing \$260,000. Using the same logic, our rent expense of \$33,750 covers the startup period of three months where we will be outfitting our facility and beginning product launch in August.

Impact+ Requires Three Rounds of Fundraising for Growth Acceleration Henceforth

Over our first five years, we forecast a total investment of \$2,342,632 (See *FE Exhibit 1: Total Paid-in Capital*). Our Time-0 budget required to launch our product, Impact+, is \$1,328,000 (See *FE Appendix 1: Start-up Costs Breakdown*). In this start-up period, we will have \$250,000 (19%) of our total start-up costs funded by friends and family. We will require the remainder of our start-up costs, \$1,078,000 (81%), in paid-in capital to operate before earning cash inflow post-launch from our external investors whose interests align with Impact+'s mission statement.

After the initial investments in our start-up period, we will require two other rounds of fundraising in Year 1 and 3 of \$314,959 and \$699,673 (See *FE Appendix 4: Balance Sheet*), respectively, to fuel our expected growth phase initiation in Year 3.



FE Exhibit 1: Total Paid in Capital

Our Financial Management Allows Investors to Receive Dividends Starting in Year 2

Starting from Year 2, Impact+ will begin paying back its investors in the form of dividends. After Year 3, Impact+ will have a positive net cash flow (See *FE Appendix 5: Cash Flows Statement*) and will not be requiring any further fundraising.

All investments will be paid back after 5.5 years, and we expect to continue paying dividends thereafter (See *FE Exhibit 2: Payback Period*).

Payback Period	Y0	Y1	Y2	Y3	Y4	Y5	Y6
Paid-in capital cumulative	\$1,328,000	\$1,642,959	\$1,642,959	\$2,342,632	\$2,342,632	\$2,342,632	\$2,342,632
Dividends paid cumulative	\$0	\$0	\$131,191	\$131,191	\$981,163	\$1,898,454	\$2,815,745
Difference	\$1,328,000	\$1,642,959	\$1,511,768	\$2,211,441	\$1,361,469	\$444,178	\$(473,113)

FE Exhibit 2: Payback Period

Target Market Growth and Lowered SG&A Expenses Drive Sales

We expect our sales to have a positive CAGR of 58% (See *FE Appendix 2: Income Statement*) from Years 1-5. This growth is attributed to an increase in target segment growth, through expanding our retail channel partners and higher awareness over time due to our marketing efforts. This growth is the main driver in the increase of net income over time. However, when we look at our metrics as a function of sales we can see a clearer picture of how our sales turn into revenue. Our net income as a percent of sales increases from 4% in Year 1 to 13% in Year 5 (See *FE Exhibit 3: Financial Ratios*). This growth mainly comes from our ability to substantially lower our SG&A expenses over time as a percent of sales. While we would expect our gross margin percent of sales to decrease due to reducing raw material costs and efficient manufacturing, it instead fluctuates. This is because our shipping costs increase as a result of an expansion in the number of retail channels we sell through.

Income Statement Financial Ratios	Y1	Y2	Y3	Y4	Y5
COGS % Sales	54%	52%	52%	53%	53%
Gross Margin % Sales	46%	48%	48%	47%	47%
Net Income % Sales	4%	10%	11%	11%	13%
SG&A % Sales	24%	20%	13%	12%	10%
Marketing Expenses % Sales	5%	3%	4%	4%	3%

FE Exhibit 3: Financial Ratios

Significant Jump in ACV and Awareness in Year 3 Increases Units Sold

A notable amount of Impact+'s growth over the years can be attributed to our consistent marketing efforts. The increase in ACV and awareness is a significant factor to the increase in units sold. More specifically, as we start to sell through chain retailers in Year 3, we go from selling 30,031 units in Year 2 to 86,330 units in Year 3, with awareness surging 14.79% (See *MK Appendix 2: IMC Schedule*). Needless to say, the surge in awareness and ACV cannot be solely attributed to the increased distribution to chain retailers. Increased spending in magazine ads, guerilla marketing, and influencer marketing are all additional factors that increase units sold. Ultimately, we see this change in units sold reflected in our revenue and net income, increasing by \$7,130,883 and \$842,132, respectively, over Years 2-3 (See *FE Appendix 2: Net Income Statement*).

As Our Product Matures, So Does Our Margin of Safety

We expect our EBIT break even to occur in Year 1 with a positive break even sale of \$2,421,826 and a margin of safety of 11% (See *FE Exhibit 4: EBIT Break even*). Our margin of safety drastically increases in Year 2 due to our ability to sell more units while maintaining our operating expenses. As our product leaves the introduction phase and enters the growth phase, in Year 3, our break even sales increases over two-fold. This increase is due to our expected sales doubling from the previous year; thus greatly increasing our administrative costs, benefits, and buying new machinery to meet demand. Despite these growing pains, we are still able to maintain our margin of safety through Year 4 by having our growth match our increase in SG&A

expenses. By Year 5, we are able to improve our margin of safety even more by allowing our sales to outpace our SG&A expenses (See *OM Appendix 5: SG&A Expenses*).

EBIT Break Even	Y1	Y2	Y3	Y4	Y5
Fixed Costs (incl. depreciation)	\$1,181,483	\$1,417,119	\$3,828,683	\$4,378,333	\$5,282,207
Price/ unit	\$132.12	\$131.62	\$128.39	\$126.35	\$121.80
VC/ unit	\$67.67	\$65.75	\$64.18	\$63.79	\$62.20
Units Sold	20,540	30,031	86,330	99,395	137,366
B/E Quantity	18,330	21,515	59,628	69,983	88,624
B/E Sales	2,421,826	2,831,782	7,655,374	8,842,395	10,794,435
Margin of Safety (%)	11%	28%	31%	30%	35%

FE Exhibit 4: EBIT Break even

Impact+ Net Income % Of Sales Is Greater Than The Industry Average

For our comparable analysis we are comparing our Year 5 numbers in order to compare the same companies we used to help calculate our WACC (besides Nautilus Inc due to it having a negative net income) (See *FE Appendix 6: Beta and CAPM*).

These companies are major players in the sports industry which provide a good benchmark to allow us to understand our financial health compared to our competitors. We will be using the year 2020 financial numbers for this analysis. Just by observing the net income, our profits are minuscule compared to our competitors; however, by looking at our net income percent of sales we are receiving almost 50% more profit from our sales than the industry average. This gain is attributed to us having a lower SG&A as a percent of sales compared to the industry (See *FE Exhibit 5: Comparable Companies*).

We develop turning our small-scaled business into an advantage as our size and leaner company is tantamount to having a lower operating expense and administrative friction compared to the industry.

Y5 Ratios	Impact +	Escalade Inc	Johnson Outdoors	Acushnet Holdings	Dick's Sport.	Average
Net Income (in thousands)	\$2,163	\$40,315	\$55,233	\$96,006	\$530,251	\$180,451
A/R Days	32.9	135.6	41.3	45.6	2.0	56.1
A/P Days	24.9	44.6	41.4	52.7	70.3	52.22
Inventory Days	146.2	133.1	108.0	166.9	109.1	129.3
Gross Margin % Sales	47%	14%	45%	51%	32%	36%
Net Income % Sales	14%	9%	9%	6%	6%	8%
SG&A % Sales	9%	15%	28%	38%	24%	26%
ROA	39%	18%	10%	5%	7%	10%
ROE	44%	29%	15%	9%	23%	19%

FE Exhibit 5: Comparable Companies

Impact+ Has a Higher Efficiency with Resources Utilization Compared to Competitors

Turning our focus to the balance sheet metrics (See *FE Exhibit 5: Comparable Companies*), we see that we have a relatively low accounts receivable compared to the industry, excluding Dick's, which is a massive B2C retailer that makes most of its sales through cash and credit cards. This is due to 30% of our orders going through Amazon (See *MK Exhibit 17: Channel RSP and MSP*) which has an accounts receivable of 5 days while the rest of our accounts receivables takes 45 days to process (See *FE Exhibit 6: Balance Sheet Ratios*). This allows us to convert our accounts receivable into cash more quickly compared to the industry. However, we have low accounts payable days due to being a smaller company and having less leverage in demanding longer payment periods from suppliers.

Our inventory days are slightly higher than the industry average, which is due to our relatively high service level hedging against sudden increases in demand. We have a larger ROA mainly because we are a company planning to be funded through equity. Unlike us, the industry is filled with more well-established companies that are being funded by long term debt thus having a higher amount of overall assets as a percent of net income.

Looking at our ROE, it increases slightly more compared to our ROA because we do have some accounts payable. Despite this, we continue to have a larger return on equity compared to the industry because of our higher net income % sales (See *FE Exhibit 5: Comparable Companies*).

Balance Sheet Financial Ratios	Y1	Y2	Y3	Y4	Y5
Accounts Receivable Days	8	10	21	29	33
Accounts Payable Days	25	25	25	25	25
Total Inventory Days	157	157	153	149	146

FE Exhibit 6: Balance Sheet Financial Ratios

We analyzed our balance sheet from Year 1-5 in order to better quantify our company's value. Focusing on our current assets, it drastically increases from \$249,558 in Year 1 to \$5,366,408 in Year 5 with a CAGR of 46% (See *FE Appendix 4: Balance Sheet*). This increase is influenced by two factors, our increase in accounts receivable and in our inventory & raw materials.

Looking at our accounts receivable days, we notice that it increases from 8 in Year 1 to 33 in Year 5 (See *FE Exhibit 6: Beta and CAPM*). Although it is aforementioned that our accounts receivable is shorter compared to the industry average, it still increases year over year due to our longer payback period as we sell more through brick and mortar stores.

While our inventory days do decrease slightly over time from Year 1-5, our overall inventory grows greatly due to our increase in demand in Year 3, when our product reaches maturity. This sudden increase in demand drastically affects our current assets.

The Growth Phase Will Have Growing Pains, But They Will Benefit Us In The Long-run

Our cash flow statement demonstrates our investment strategy clearly from Year 1-5. Looking at our start-up period, our business sees an outflow of cash raised from investors with the greatest investment being our initial fixed assets. With an 88% increase in net working capital in Year 1 (See *FE Appendix 5: Cash Flows Statement*) and a net income of only \$103,000 we are still cash flow negative, as can be expected (See *FE Appendix 2: Income Statement*). However, in

Year 2, we are cash flow positive due to the significant increase in net income simultaneous with a slight decrease in net working capital.

Our net working capital between Year 1 and 2 does not change drastically as we defer further investment in Year 3, when demand has the greatest increase, ultimately highlighting our investment strategy. In Year 3 we plan to see an outflow of cash around \$700,000 which can be attributed to the hiring of new C-suite employees, managers, and even more fixed assets to manage the new demand (*See FE Appendix 5: Cash Flows Statement*). This cash injection in Year 3 is crucial to the success of our business as it allows our cash flow for Year 4 to increase by over 200% while maintaining a similar number of units sold.

The Required Rate of Return is Conducted from the Industry's Average Systematic Risk

We conducted comparable company research in the Home Workout Equipment industry. However, given the novelty of Impact+, it was difficult to find truly comparable companies because our competitors tend to have much more diversified product offerings, and are established firms with long track records.

We then utilized the Capital Asset Pricing Model (CAPM) to calculate our rate of return. Thus, we found the average of the betas of our comparable companies and selected it as the beta for Impact+: 1.23 (*FE Appendix 7: Competitors and Respective Betas*). Then, we set the risk-free rate at 1.78% given the yield on the 30-Year Treasury Bill on the 1st of December, 2021 and the Morningstar Long Horizon Equity Risk Premium is 6.7%. Finally, we calculated our discount rate and added a size premium of 6.03% to arrive at a final required rate of return of 16.02% (*FE Appendix 6: Beta and CAPM*).

Competitor	Beta	Company Description
Escalade Inc. (ESCA) ³⁶	0.8	Market capitalization of \$220.82 million and focus on sports games and outdoor training equipment
Nautilus Inc. (NLS) ³⁷	1.8	Market capitalization of \$218.86 million and specialize in home-gym equipment as well as specialized fitness machinery
Acushnet Holdings	0.81	Market capitalization of \$3.95 billion and as the global leader in

³⁶ “Value Line - Research - Browse Research,” Escalade Inc., December 3, 2021, <https://research.valueline.com/research>.

³⁷ “Value Line - Research - Browse Research,” Nautilus Inc, December 3, 2021, <https://research.valueline.com/research>.

(GOLF) ³⁸		performance-driven golf training products
Johnson Outdoors (JOUT) ³⁹	0.93	Market capitalization of \$988.31 million and produce a wide array of outdoor recreational equipment
Dick's Sporting Good (DKS) ⁴⁰	1.79	Market capitalization is \$9.59 billion and they are an International leader in the retail of generalized sports equipment

FE Exhibit 7: Competitors and Respective Betas

Our Product Life Cycle Peaks in Year 5 and Lasts Until Year 15

We expect our product life cycle to last 15 years. We have come to this conclusion by talking with a sales representative from Lobster Sports, a company that produces tennis ball machines, who said their product's life cycle lasts around 13 years. We used this machine as a determinant as our product life cycle time due to the semi-public nature of the product, which is in the specialized sports equipment product category. To determine expected cash flows of Years 6-15, Year 6 cash flow was calculated by applying a 0% growth rate on Year 5 cash flow, and the growth rate is applied till Year 10. In other words, Years 6-10 is our maturity phase. In Year 11, we enter the decline phase of our product life cycle and apply cash flows sequentially with a 20% decline rate. This is due to an assumption of increased competition within the sports equipment industry, which leads to eventual market saturation. In Year 15, we arrive at a cash flow of \$331,349, which we plan to reinvest in complimentary brand extension products such as the *Impact+ Sports Watch* and *Coach+* (See *FE Appendix 5: Cash Flows Statement*).

To determine the terminal value, we took the NPV of expected cash flows from Years 6-15, applied with our discount rate of 16.02%, to arrive at a terminal value of \$4,210,681 at Year 5 (See *FE Appendix 5: Cash Flows Statement*).

³⁸ “Value Line - Research - Browse Research,” Acushnet Holdings, December 3, 2021, <https://research.valueline.com/research>.

³⁹ “Value Line - Research - Browse Research,” Johnson Outdoors, December 3, 2021, <https://research.valueline.com/research>.

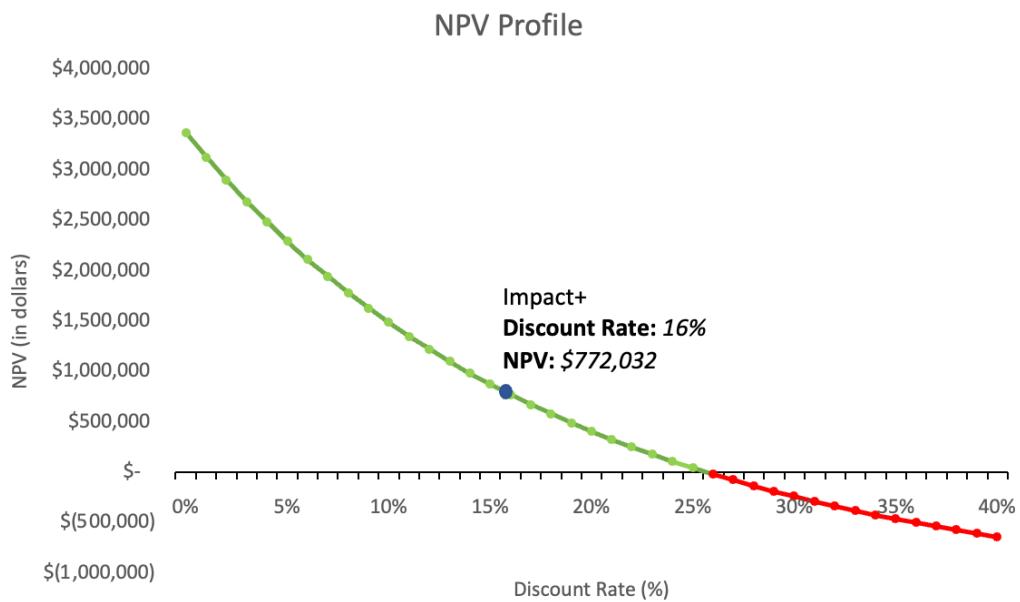
⁴⁰ “Value Line - Research - Browse Research,” Dick’s Sporting Goods, December 3, 2021, <https://research.valueline.com/research>.

Expected NPV and IRR that Showcase Long-term Profitability

Our Net Present Value (NPV) is \$772,032 and was calculated with the total cash flows, including our terminal value at Year 5. Moreover, our Internal Rate of Return (IRR) is 25.73% (See *FE Appendix 5: Cash Flows Statement*). Overall, this places us in the range of 25%-30% IRR that investors seek in sports equipment startups⁴¹; thus, highlighting the profitability of this investment and giving investors confidence in their long-term returns.

Our NPV is above zero and represents the value added through producing Impact+, given that it is much higher than \$0 it gives us a comfortable buffer to perform simulations and increases the probability our venture will not drop under \$0 NPV. Ultimately, providing security to investors and allowing us the financial flexibility to continue investing in our production expansion throughout the product life cycle.

Our IRR is above our discount rate of 16.02% and thus, signals this is a successful investment, especially because the difference between the IRR and the discount rate is a solid 9.71% (See *FE Appendix 5: Cash Flows Statement*). Taking a deeper look at our NPV profile, we identified our discount rate falls comfortably within the positive range of NPV dollars and further highlights the viability of our venture (See *FE Exhibit 8: Net Present Value Profile*).



FE Exhibit 8: Net Present Value Profile

⁴¹ Stephen Pihoda, “How VC Funds Calculate Their Internal Rate of Return (IRR),” Carta, October 24, 2019, <https://carta.com/blog/internal-rate-return-irr-calculator/>.

Impact+ has a Strong Financial Future and Ability to Reward Investors

With a groundbreaking product, we are committed to ensuring the success of our business through our marketing strategy and operational excellence, in addition to our financial management. We have carefully weighed each investment, decision, and financing option as well as their respective consequences. In our start-up period, we are requesting \$1,328,000 from investors, who can expect an IRR of 25.73%. Venture capitalists seek between 25-30% IRR in early stage sports equipment companies, and we fall comfortably within that range.⁴² Furthermore, our financial standing allows us to pay dividends totaling \$131,191 starting in Year 2 and increasing to \$917,291 in Year 6, with a payback period of 5.5 years – better than the industry average.⁴³

Especially in Year 5, we are generating cash at a tune of \$917,291 illustrating the good shape of our business management. From Year 1-5 we surpass the industry standard for the gross margin as a percent of sales by around 10%. This allows our business to retain it's competitiveness while also maintaining steady growth in the market. In addition, our net income as a percent of sales is almost 50% more than the industry average. Our starting business is smaller than our competitors, but with our higher IRR, investors will be able to generate a higher return on their investment.

In addition to our excellent cash flows we are also able to develop a competitive advantage compared to our industry competitors. For example, our net income as a percent of sales is 14% compared to the industry average of 8%. Additionally, our ROE is 44% compared to the industry average of 19%, emphasizing our efficient use of capital compared to competitors. Our simulated financial statements in the following cross-functional risk management section, allow us to better understand how our numbers are affected by various changes and unpredictable events. Overall, our financial team considers risk management in all decisions, using simulations and quantitative tools to make the most accurate data-driven decisions.

⁴² Stephen Pihoda, “How VC Funds Calculate Their Internal Rate of Return (IRR),” Carta, October 24, 2019, <https://carta.com/blog/internal-rate-return-irr-calculator/>.

⁴³ “Payback Period,” leanmanufacture., n.d., <http://www.leanmanufacture.net/kpi/paybackperiod.aspx>.



Cross-Functional Risk Management

Section 4

CROSS FUNCTIONAL RISK MANAGEMENT

Introduction to Cross Functional Risk Management

In an effort to successfully enter the youth sports equipment market, we have estimated, assessed, and controlled for a rational amount of risk associated with the industry. Through our base case assumptions, we performed additional market research through our conjoint survey to better understand consumer preferences. Furthermore, we analyzed various risks through qualitative and quantitative factors, and ran sensitivity analyses and simulations on said risks to see how it would impact NPV. Our mitigation strategies aim to lower the variance of our NPV, ensuring profitability and the success of Impact+ over the long-run.

Running Conjoint Analysis to Help Understand Customer Preferences

To decide the best combination of attributes for our product, our team developed a product profile of Impact+'s different attributes and varying levels. From the results, our team was able to determine the features our respondents preferred most. The attributes and corresponding levels included:

- **Price:** Impact+ is either priced at \$300, \$400, or \$500
- **Size:** Impact+ will be sized at either 4' by 6' (large) or 3' by 3' (small)
- **Portability:** Impact+ will either be wall mountable (indoor only) or portable (with stand and wheels)
- **Information Display:** Mobile application to store performance data or external monitor to view statistics but does not store performance data

From 106 responses, we discarded 63 due to incomplete survey taking. Out of the 43 usable responses, we executed a conjoint analysis to determine the ideal product profile. We found out that the preferred attributes of Impact+ include a price of \$300, portable, 4'x 6' size, and displaying information through a mobile application. This product profile aligned with market research collected from consumer interviews, and ultimately was implemented into our final design and pricing strategy (See *OM Exhibit 2: Materials and Respective Suppliers*).

Moreover, we were able to further the development of our product and expand on new assumptions. Although more women responded than men, we were still able to determine preference differences between the genders. We found that women were more price sensitive

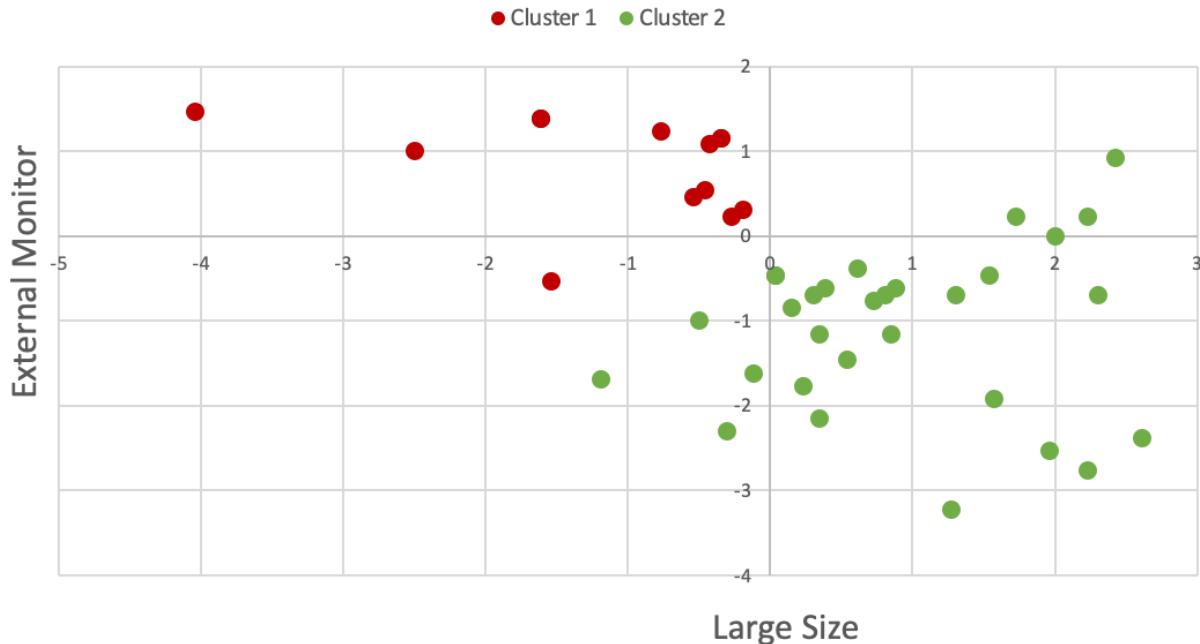
than men and that men preferred a larger size for the pad. However, both genders displayed an unanimous opinion in that they preferred Impact+ being portable and having data relayed back to a mobile app. We also found information regarding “high earners” with an income of more than \$120,000 annually; this demographic preferred a large pad, portability, and a mobile app. We can see that in our cluster analysis (See *QM Exhibit 2: Cluster Analysis of Size vs. Monitor*) as well, with most leaning towards a large size preference and in favor of the app as an information display.

In conclusion, our conjoint analysis allowed us to get a better understanding of which features to include in Impact+. In the end, our team created the sports pad to be portable, with a size of 4’x 6’, and having a mobile app that allows users to access the data analytics from their practice. Our team also decided to price the product at \$220, which is further highlighted by our marketing demand curve.

Variable	Mean	Range	Importance Ratio	Min	Max	StdDev
Intercept	4.92			2.23	7.23	1.179
300=1	0.59	1.45	46%	-1.60	2.48	0.904
500=1	-0.86			-3.92	2.21	1.180
large=1	0.30	0.30	9%	-4.04	2.62	1.386
wallmount=1	-0.90	0.90	28%	-3.12	1.50	1.051
monitor=1	-0.52	0.52	16%	-3.23	1.46	1.251

QM Exhibit 1: Summary of Partworth Findings

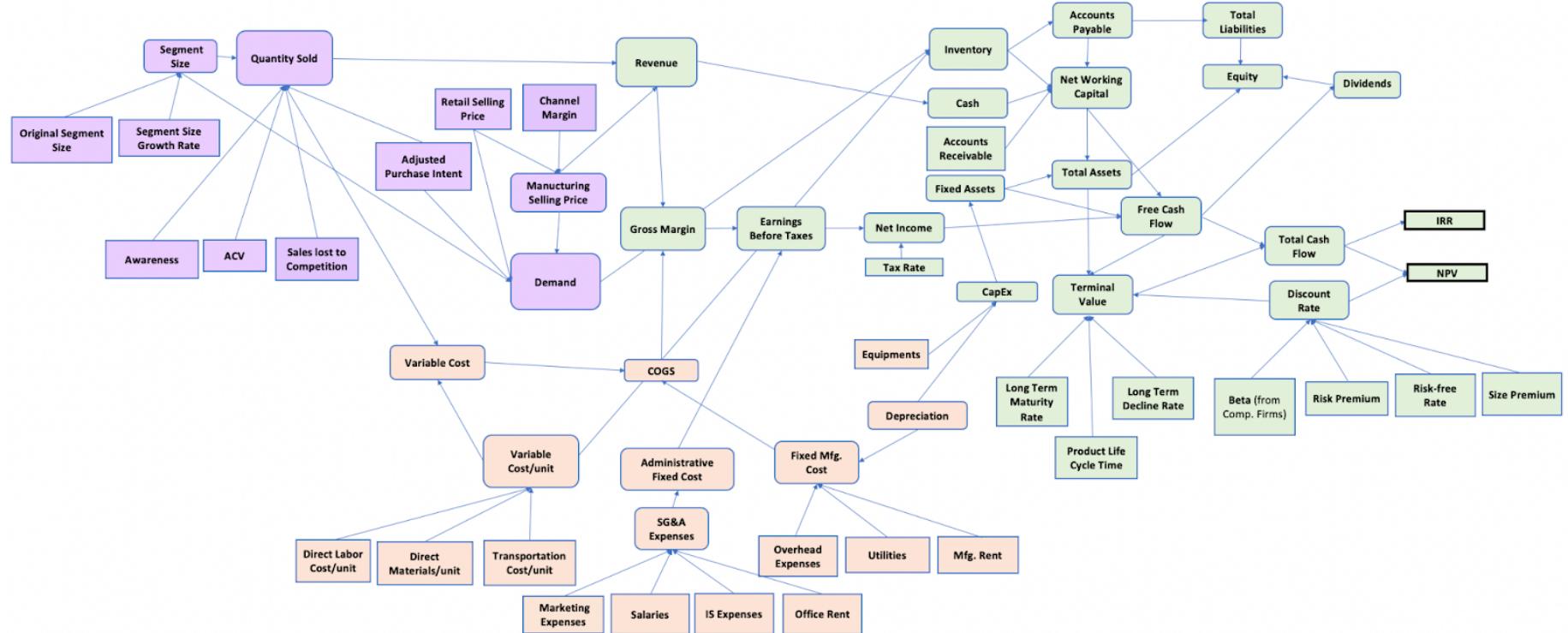
Large Size Partworth vs. External Monitor Partworth



QM Exhibit 2: Cluster Analysis of Size vs. Monitor

Creating an Influence Chart to Grasp an Understanding of Important Parameters

Creating an influence chart helps us visually display decision problems and identify potential risks. After illustrating all possible parameters that would impact the business operation, we were able to identify the key parameters that are considered high probability and high impact: purchase intent, awareness, discount rate, direct materials cost, and starting segment size. To further understand the impact of these risks, we conducted sensitivity analysis and simulations (See *QM Exhibit 3: Influence Chart*).



QM Exhibit 3: Influence Chart

Matrices Emphasize High Impact and High Probability Risks

From an initial assessment of our business, we formed a list of potential qualitative and quantitative risks that we could encounter through the marketing, finance, and operations functions. In order to create risk matrices, our team estimated how likely these risks were to occur, along with the impact it would have on the company (See *QM Exhibit 4* and *QM Exhibit 5* for respective qualitative and quantitative risk matrices).

Qualitative Risks		
High Impact	Public relation crisis arises and results in a boycott of our product	Competition learns from our product offering and launches a better alternative
	Absenteeism among employees results in reduced efficiency in day-to-day operations	
	Supply chain disruption due to Covid-19	Customers' preferences and tastes change over time, lowering the demand for Impact+
	Shareholders divest , leading to loss of company's assets	
	Cargo backlog increases lead time	
	Non-standardized operating procedures lead to inefficient productivity	Customers experience post-purchase dissatisfaction with Impact+
Low Impact	Unexpected property/equipment damage leads to extra time and costs spent on repairments and/or replacements	Conflict of interest between company and employee jeopardizes success of business
	Natural disasters result in property damage of factory and/or delays in freight and shipping	
	Factory strikes and/or union labor conflict lead to inability to fulfill order quantities on time	Internal conflict between management leads to delayed and/or biased decision making
	A late loan credit or doesn't receive the loan payment at all	
	Low Probability	High Probability

QM Exhibit 4: Qualitative Risk Matrix

Quantitative Risks		
High Impact	Online RSP	*Direct Materials / Unit
	Chain Retailers RSP	*Awareness
		ACV
	Competition Adjustment	Awareness
Low Impact	AR Days (Except Online)	Starting Segment Size
	Raw Materials Reduction Rate	
	Discount Rate	Marketing Expenses
	Tax Rate	
	Holding Cost Rate	Variable Overhead/ Unit
	Low Probability	High Probability

QM Exhibit 5: Quantitative Risk Matrix

Asterisk () represents variables chosen to conduct simulation analysis*

Conducting Sensitivity Analysis to see the Various Risks and Effects to NPV

After identifying fifteen quantitative marketing, operations, and finance variables, our team conducted a sensitivity analysis to determine how each would impact our NPV. Since Impact+ has no historical data – and all values are pulled from research and tutorials – we note that there will be an inevitable probability of error in our sensitivity analysis.

From the variables that we used in sensitivity analysis, marketing risks presented as generally the most elastic variables, although direct materials/unit ranked as the highest. All other operations and finance risks however, have relatively low elasticities. The 30.31% elasticity of direct materials/unit can be explained by its linkage to COGS, which is one of the most consequential costs relative to net income and NPV. Within COGS, direct materials account for more than 90% throughout our 5 years, further explaining its extreme sensitivity relative to NPV. Our marketing risks (i.e awareness, ACV, purchase intent, starting segment size, online RSP, and chain retailer RSP) are also high impact variables. We believe this is attributed to their linkage to marketing expenses, which affects SG&A and ultimately earnings before tax. (See *QM Exhibit 6: Sensitivity Analysis* for summary statistics of our complete sensitivity analysis.)

Variable	NPV Break Even Value	NPV with 1% increase	Absolute Value of Elasticities
*Direct Materials/unit	\$67.12	\$538,014	30.31%
*Awareness	6.65%	\$905,127	17.24%
ACV	13.19%	\$905,127	17.24%
Purchase Intent	12.56%	\$905,127	17.24%
Starting Segment Size	14,664,000	\$902,461	16.89%
Online RSP	\$206.22	\$878,732	13.82%
Chain Retailer RSP	\$201.42	\$852,752	10.46%
Competition Adjustment	23.3%	\$725,030	6.09%
Tax Rate	34.9%	\$745,605	3.42%
Discount Rate	22.2%	\$746,760	3.27%
A/R Days (Channels Except Online)	64	\$753,612	2.39%
Raw Materials Reduction Rate	1.04%	\$787,998	2.07%
Marketing Expenses	\$188,233.09	\$757,084	1.94%
Holding Cost Rate	14.2%	\$782,853	1.40%
Variable OH/unit	\$5.99	\$764,069	1.03%

QM Exhibit 6: Sensitivity Analysis Summary Table

Asterisk () represents variables chosen to conduct simulation analysis*

Simulation Analysis on Direct Materials per Unit and Awareness Shows Large Impact in NPV

After conducting sensitivity analysis, our team sought to examine the range of variation in NPV with our elastic variables as input parameters. To do so, we conducted simulation analysis. The most elastic variables – Direct Materials/Unit and Awareness – proved to have the largest effect on NPV, so we explored the distributions: base, best, and worst cases of these variables.

We chose to run direct materials/unit as a triangular distribution, as it has a bounded range. The best case brings the variable's cost down by 15% of the base value; it is the estimated cost of lower-quality material alternatives we found in the Chinese market. The worst case increases the base value by the same variability (15%). Our worst case value is our estimation of extra buffer costs charged by our current suppliers due to low quantity orders in early years. Furthermore, supply chain disruption remains an issue as we take into account the unpredictable effects of pandemic restrictions. Thus, we believe that 15% variability is a reasonable estimation as the worst case scenario (See *QM Exhibit 7: Awareness Parameters* for an outline of our base, best, and worst case parameters for direct materials).

Direct Materials/Unit		Parameters	Y1 Real Conversion	Y5 Real Conversion
Triangular Distribution				
Best Case	0.85		\$ 55.22	\$ 50.93
Base Case	1.00		\$ 64.97	\$ 59.92
Worst Case	1.15		\$ 74.71	\$ 68.91

QM Exhibit 7: Distribution Parameters for Direct Materials Cost per Unit

Although ACV, purchase intent, and awareness have the same elasticity, we chose awareness as a simulation variable because of those three, awareness is the variable within our locus of control. Since purchase intent is driven by price and ACV is driven by distribution, adjusting these variables requires a change in pricing strategy and channel distribution strategy. However, awareness is calculated based on the number of impressions required of an unaware user to be considered “aware.” In other words, awareness is measured as the effectiveness of our marketing campaigns, which are easier to manipulate than pricing and distribution. For our base case, we estimate that awareness is generated after four impressions. In our worst case, a user requires six impressions to become aware, and in our best case they require two.⁴⁴ As we compare our base case, which requires 4 impressions, to our minimum and maximum parameters, the worst case would account for 67% of the base case and 133% for the best case (See *QM Exhibit 8: Direct Materials Cost per Unit* for an outline of our base, best, and worst case parameters for awareness).

Awareness	Parameters	Y1 Real Conversion	Y5 Real Conversion
Triangular Distribution			
Worst Case	0.67	5%	19%
Base Case	1.00	7%	29%
Best Case	1.33	9%	39%

QM Exhibit 8: Distribution Parameter for Awareness

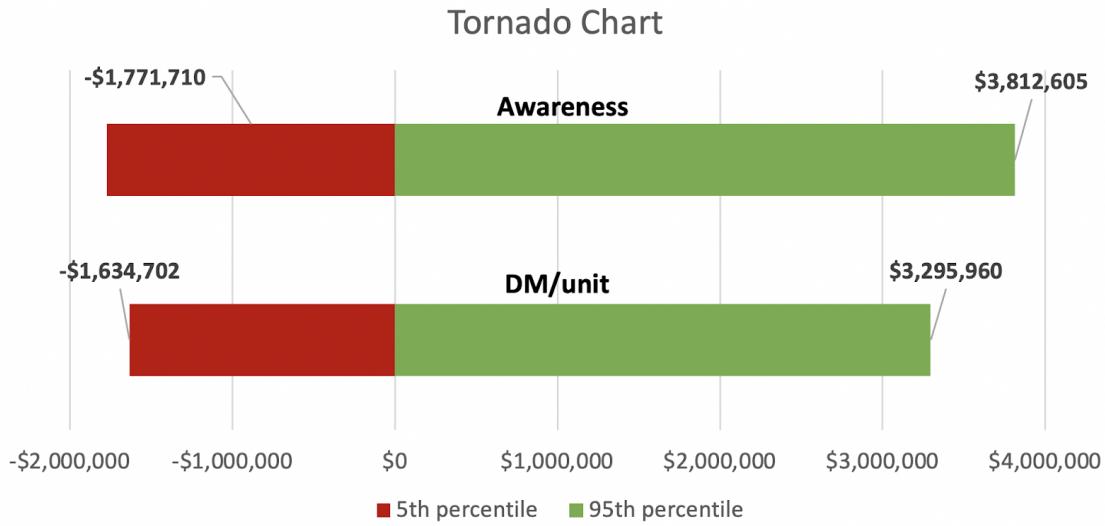
After executing the simulation analysis, we calculated summary statistics based on the output of NPV. Notably, the average is above the median NPV across all simulations –an expected outcome due to the nature of a triangular distribution. The standard deviation, however,

⁴⁴ Pam Moore, “10 Reasons Why Personal Branding Is a Requirement for Marketers & Business Leaders,” Pam Marketing Nut, February 8, 2017, <https://www.pammarketingnut.com/2014/05/personal-branding-strategy-social-media-marketing-white-paper/>.

is substantially larger than the average. Since the standard deviation represents the dispersion of the data, we conclude that there is extremely high variation between direct materials/unit and awareness. This conclusion is confirmed by the range between the 5th percentile (value at risk) and the 95th percentile of each variable (See *QM Exhibit 10: Tornado Chart*). The length of this range in the tornado chart represents each variable's impact on risk. Awareness is slightly larger than direct materials cost/unit, which concludes that awareness is the riskier variable. Finally, the percent of negative NPV values per variable indicates a high level of risk among both direct materials and awareness. With %NPV<0 near 30% for both variables, there is a high probability that our company can be NPV negative given the worst case scenarios. For more summary statistics about our simulation variables, see *QM Exhibit 9: Simulation Analysis*. As a result of these high risks, Impact+ has taken preventive measures with marketing and operations risk mitigation strategies.

NPV Summary Statistics	DM/unit	Awareness	All Variables
Average	\$841,799	\$837,135	\$925,010
Median	\$822,682	\$772,746	\$569,181
Standard Deviation	\$1,478,818	\$1,662,698	\$2,111,430
25th percentile	-\$267,463	-\$477,751	-\$718,474
75th percentile	\$1,932,300	\$1,987,276	\$2,372,745
5th percentile	-\$1,634,702	-\$1,771,710	-\$2,035,886
95th percentile	\$3,295,960	\$3,812,605	\$4,863,712
VaR@5%	-\$1,634,702	-\$1,771,710	-\$2,035,886
Minimum	-\$2,386,692	-\$2,469,309	-\$2,554,774
Maximum	\$4,174,516	\$5,091,653	\$9,029,561
%NPV < 0	29.9%	33.7%	38.3%

QM Exhibit 9: Summary Statistics of Simulation Analysis



QM Exhibit 10: Tornado Chart

Risk Mitigation Strategies Act as Preventative Measures

Marketing risks can be mitigated with strategic pull spending and warranty programs

To mitigate awareness risks, we look back to the IMC schedule and its associated marketing expenses. Within IMC, we will specifically look into improving aspects of our pull strategy to ensure consistent growth in awareness. For example, we will create contracts with representatives from our 8 events, as well as with social media influencers who are promoting Impact+ through posts. Contracts ensure that our partners will fulfill their responsibilities and get our product out there in the consumers' eyes. Additionally, we plan to diversify our guerilla marketing campaigns, spreading them out in different times of the year for more effective promotion. Internally, we are going to maintain an active Instagram (@shopimpactplus) with campaigns, stories, polls, and general interaction with our followers to increase our owned and earned media. By implementing these strategies, we believe that we can greatly mitigate the risk of awareness and drive down the variance of NPV relative to the awareness variable.

After mitigating awareness risks, we aim to have a higher awareness and a higher demand curve. In order to retain the customers rather than finding new customers, we will implement a customer warranty program from Year 3, which is the turning point to the growth stage. Implementation of the customer warranty program will lower the likelihood of a decrease in demand due to change of customers' preferences and customer post-purchase dissatisfaction.

Direct Materials and ACV risks can be mitigated through better procurement practices

The consistency and reliability of our direct materials is strongly correlated with the nature of our relationship with our supplier. Thus, we plan to maintain a trusting, cordial relationship with our suppliers to ensure long term sustainability and partnership. In order to reduce direct material price variance, we plan to have better price negotiation through implementation of better procurement practices. Most importantly, we have to be selective with our choice of suppliers, partnering with one that can reliably fulfill supply needs and offer economies of scale as Impact+ scales up in quantity over time.

Since we plan to negotiate heavily with our online, chain and mass retailers, it is crucial to ensure satisfactory price and distribution volume throughout the years. Starting in Year 2, we plan to heavily increase our distribution to online retailers, namely Amazon. Starting in Year 3, we plan to expand into chain retailers such as Dicks Sporting Goods and Playing it Again Sports. In Year 4, we introduce mass merchants, namely Target (See *MK Appendix 2: Consumer Interviewees*). By building long term relationships with our retailers, we can negotiate a rising distribution volume over time so that the ACV of Impact+ increases steadily.

Cross Functional Risk Management Conclusion

Within cross functional risk management, we have implemented a wide variety of analytical techniques to identify and evaluate important qualitative and quantitative risks within the sports equipment industry. In addition to risk management, we have identified important customer preferences and parameters for simulation through conjoint analysis and the influence charts, respectively.

From sensitivity analysis, we learned that Direct Materials / Unit is our risk with the highest elasticity, attributed to its heavy influence on COGS. Our simulation analysis confirmed direct materials and awareness as our two riskiest variables, as standard deviation resulted substantially higher than the average. The range between value at risk and the 95th percentile shown in the tornado chart takes the evaluation between the two simulation variables to the next step; as awareness has a larger range, it means that it has a higher impact on risk and therefore the riskier variable.

Finally, our main mitigation strategies relate to strategic spending in our pull marketing and supplier relationship management. We believe that through our analyses techniques used to

evaluate risk management, we minimize and mitigate our most sensitive risks, stabilizing the variance of NPV and ensuring the success of our project.

Evaluating Impact+ as a Successful Business Venture

At Impact+, we aim to help young athletes from “impact” sports build their skills at-home by leveraging analytics to improve performance. Although we are aware of the struggles that come with entering a rapidly growing industry, like sports equipment, our strategic and combative marketing, operations, financial, and cross-functional management strategies enable us to be successful.

As we’ve discussed, we found a lack in sports training equipment that possessed multi-sport functionality for youth athletes. Our team jumped on an opportunity to bring our idea to reality – helping young athletes make an impact in their respective sport. From conducting primary and secondary research, we were able to identify, segment, and select our target market to develop a position for our product. Designing an intricate five year IMC schedule will allow our product to generate awareness and ultimately create a brand for ourselves. Our demand curve aids us in finding the best pricing strategy and our channel analysis helps us determine the best distribution strategy for Impact+ without compromising quality. These determinants create a strong foundation for Impact+, paving the way for the company to be a successful and profitable startup.

To enforce our belief that Impact+ will be a successful company, projected numbers indicate that our investors can expect a payback to their investment beginning in Year 2 with dividend payments. With an IRR of 25.73% and an NPV of \$772,032, investors should be confident in their return on investment in our company. To minimize any concerns and protect against the possible hazards that Impact+ could face, our team has devised extensive risk assessments on parameters that have an impact on NPV. In doing so, our team was able to prepare risk mitigation strategies, which include enforcing contracts with marketing campaigns and strong procurement practices when sourcing direct materials.

As has been noted, Impact+’s key positioning enables the product to launch in the sports equipment industry and gain a large market share throughout its product life cycle. This innovative way of using data analytics to improve sports performance will allow consumers to reimagine the way they practice. Impact+ looks forward to having you, investors, join our team and help us make a large impact as we enter the sports equipment market. To our future investors, we urge you to ***Invest, with Impact.***



Appendix

Marketing Appendices

MK Appendix 1: Segmentation Grid

	Targeted Segment #1	Targeted Segment #2
Segment Name	Devoted Dads	High Hopes
Image of identified target consumer		
Segment size	6.7 million HHs	8.8 million HHs
Demographics	HHs with income >\$75K and children/grandchildren under 18	HHs with income >\$75K and children/grandchildren under 18
Psychographics	HH regularly plays sports (5-7 times/week), is involved in child's/grandchild's sport, pursues elite sports for children, dreams of athletic scholarships	HH is casually athletic (practices 2-4 times/week) but have high expectations for their child's/grandchild's sports career and is actively involved in their sports
Max Retail Price	\$300	\$250
Key Influencers	Children, coaches, college recruiters, professional athletes, other parents who have athletic children, athletic children, teammates	Children, coaches, professional athlete figures, other parents who have athletic children, others' athletic children, teammates
Other Products Segment Buys	Memberships to athletic facilities, private lessons, digital performance trackers, virtual sport simulations, children's toys, mini sports gear	Digital performance trackers, virtual sport simulations, children's toys, mini sport gear like nets and balls
Key Attributes & Benefits Sought by Segment	Impact+ provides real time performance tracking for their child's sport → no need to travel for facilities	Impact+ provides real time performance tracking for their child's sport → no need to travel for facilities
Segment's Information Sources	Coaches, ads, sports stores, social media, radio ads, sports magazines, other parents with athletic children, Boys & Girls clubs	Coaches, ads, sports stores, social media, radio ads, sports magazines, other parents with athletic children, Boys & Girls clubs
Best Distribution Outlets to Reach Segment	Sporting goods stores, large retail stores, sports magazines, street advertising, radio, YouTube	Sporting goods stores, large retail stores, sports magazines, street advertising, radio, YouTube

	Non-Targeted Segment #1	Non-Targeted Segment #2
Segment Name	Nonchalant Nancy's	Leisurely Leslie's
Image of identified target consumer		
Segment size	1.4 million HHs	1.9 million HHs
Demographics	HHs with income >\$75K and children/grandchildren under 18	HHs with income >\$75K and children/grandchildren under 18
Psychographics	HH regularly plays sports (5-7 times/week), is not involved in child's/grandchild's sport, does not long for elite athletic career or scholarship for child	HH is casually athletic (practices 2-4 times/week) and parents invest in their child's/grandchild's equipment and accessories instead of spending time to get involved in their sports directly
Max Retail Price	\$250	\$220
Key Influencers	Other parents, social media, coaches, professional athletes, traditional media	Children, professional athlete figures, community centers
Other Products Segment Buys	Digital performance trackers, virtual sport simulations, children's toys, mini sport gear like nets and balls	Fun sports equipment, nets and targets, children's toys, digital content, advanced sports accessories
Key Attributes & Benefits Sought by Segment	Impact+ centralizes sports equipment, no need to travel for facilities all the time	Impact+ offers a chance for users to improve performance without the hassle of transportation or membership to a gym/club
Segment's Information Sources	Coaches, city ads, sports stores, social media, radio ads, sports magazines, other parents with athletic children, Boys & Girls clubs	Large sports retailers, social media, TV and radio ads, Boys & Girls clubs
Best Distribution Outlets to Reach Segment	Sports celebrities, sporting goods stores, Target, street advertising, radio, YouTube, TV	Sporting goods stores, large retail stores, radio, YouTube, TV, toy stores

MK Appendix 2: Consumer Interviewees

Round	Names	Email	Location
Round 1 Interviews	<ul style="list-style-type: none"> ● Michael ● Vinachau ● Jinwoo ● Fifi ● Nicole 	<ul style="list-style-type: none"> ● smike1991@gmail.com ● vnguyen21@gmail.com ● jinwoo12k@hotmail.com ● gni89fifi@yahoo.com ● nicoletu90@gmail.com 	<ul style="list-style-type: none"> ● California ● California ● Oregon ● New York ● Colorado
Round 2 Interviews	<ul style="list-style-type: none"> ● George ● Kody ● Brandon ● Dana ● Allison ● Quang ● Natalia ● Kevin ● Jae ● Sam ● Jean ● Alex ● Helen ● Rachel ● Yousef ● Maria ● Varuyan ● Molly ● Claudia ● Andrey 	<ul style="list-style-type: none"> ● georgesu@dim.dg.cn ● fifilu4095@gmail.com ● brandonchao6@gmail.com ● dburgojr@gmail.com ● allisonsharp17@gmail.com ● ntquang71@gmail.com ● dieu@vnvn.net ● kklaubunde@smschool.us ● jaejang95v@gmail.com ● samyan088@gmail.com ● jeanp1952@gmail.com ● sralex21@yahoo.com ● helensleung@yahoo.com ● ragrin529@gmail.com ● ywardaany22@gmail.com ● mhernandez@gmail.com ● varuyans@hotmail.com ● mollybowman0@yahoo.com ● claudiamdock@gmail.com ● andreypc@yahoo.com 	<ul style="list-style-type: none"> ● California ● California ● Massachusetts ● Massachusetts ● Ohio ● Massachusetts ● California ● Oregon ● California ● Massachusetts ● New York ● California ● California ● California ● Texas ● Florida ● Florida ● California ● California ● Florida
Round 3 Interviews	<ul style="list-style-type: none"> ● Jiyoong ● Angela ● Angel ● Harrison ● Phoebe ● Caterina ● Heidi ● Jimmy ● Peter 	<ul style="list-style-type: none"> ● j0611s@daum.net ● leeangela301@gmail.com ● angelchanmei@yahoo.com ● 1982harrisong@aol.com ● phoebe60527@gmail.com ● caterinasod0@yahoo.com ● heidilynn32@yahoo.com ● jimmyvo23@yahoo.com ● p1989@gmail.com 	<ul style="list-style-type: none"> ● California ● California ● Massachusetts ● Florida ● Massachusetts ● Florida ● Connecticut ● California ● California

MK Appendix 3: Integrated Marketing Communications Schedules for Years 1 through 5

Year 1 IMC Schedule - Impact + Target Market Size = 15,586,619 HHs	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total Cost	CPM	Awareness Target Market
PULL															
Paid:															
Online Advertising													\$ 12,750		1.00%
Events															
Berlin Fair													\$ 2,280		0.14%
Terryville Lions Country Fair													\$ 2,800		0.17%
Minnesota State Fair													\$ 25,000		1.50%
USA Lacrosse Convention													\$ 4,350		0.26%
Athletic Business Conference & Expo													\$ 2,850		0.17%
Betting on Sports America Expo/Conference													\$ 10,000		0.60%
NBC4 Fitness & Health Expo													\$ 3,160		0.19%
Monumental Health and Fitness Expo													\$ 6,750		0.41%
Guerrilla Marketing															
Dunk Tank (Circus World)													\$ 8,940		0.54%
Prize Booth (Circus World)													\$ 6,440		0.39%
Turkey Canned Food Drive													\$ 1,640		0.10%
Influencer Marketing															
Nano													\$ 500		0.05%
Micro													\$ 1,250		0.25%
Micro													\$ 1,250		0.25%
Earned:															
Word of Mouth													\$ -		0.00%
Public Relations															
Magazine (Sports Illustrated, USA Today: Sports Weekly, Health)													\$ 10,000		1.00%
Blog (Sports Unlimited, Mighty Kicks, i9 Sports, Sports4Kids)															
Owned:															
Own Website													\$ 10,000		0.00%
Total Pull													\$ 109,960		7.00%
PUSH															
Trade Shows															
Boston Mania (Boston, MA)													\$ 6,799		0.00%
IDEA World Convention (Las Vegas, NV)													\$ 4,068		0.00%
Trade Magazine Ads															
National Fitness Trade Journal													\$ 3,300	\$ 188.89	0.06%
Total Push													\$ 14,167		0.06%
Total IMC Schedule													\$ 124,127		7.06%

Year 2 IMC Schedule - Impact + Target Market Size = 15,721,946 HHs		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total Cost	CPM	Awareness Target Market
PULL																
Paid:																
Online Advertising														\$ 12,750		
Events																
Berlin Fair														\$ 2,280		0.14%
Terryville Lions Country Fair														\$ 7,500		0.45%
Minnesota State Fair														\$ 25,000		1.50%
USA Lacrosse Convention														\$ 4,350		0.26%
Athletic Business Conference & Expo														\$ 2,850		0.17%
Betting on Sports America Expo/Conference														\$ 10,000		0.60%
NBC4 Fitness & Health Expo														\$ 3,160		0.19%
Monumental Health and Fitness Expo														\$ 6,750		0.41%
Guerrilla Marketing																
Dunk Tank (Circus World)														\$ 17,880		1.07%
Prize Booth (Circus World)														\$ 12,880		0.77%
Turkey Canned Food Drive														\$ 1,640		0.10%
Influencer Marketing																
Nano														\$ 500		0.05%
Micro														\$ 1,250		0.25%
Micro														\$ 1,250		0.25%
Earned:																
Word of Mouth														\$ -		0.20%
Public Relations														\$ 10,000		1.00%
Magazine (Sports Illustrated, USA Today: Sports Weekly, Health)																
Blog (Sports Unlimited, Mighty Kicks, i9 Sports, Sports4Kids)																
Owned:																
Own Website														\$ 1,500		0.00%
Total Pull														\$ 121,540		8.40%
PUSH																
Trade Shows																
Boston Mania (Boston, MA)														\$ 6,799		0.00%
IDEA World Convention (Las Vegas, NV)														\$ 4,068		0.00%
Trade Magazine Ads																
National Fitness Trade Journal														\$ 3,300	\$ 188.89	0.06%
Total Push														\$ 14,167		0.06%
Total IMC Schedule														\$ 135,707		8.46%

Year 3 IMC Schedule - Impact + Target Market Size = 15,849,134 HHs		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total Cost	CPM	Awareness Target Market
PULL																
Paid:																
Online Advertising														\$ 38,500		3.00%
Outdoor/Transit														\$ 84,419		2.53%
New Haven, CT (Billboard, Bus, Train, Airport)														\$ 59,831		1.80%
Milwaukee, WI (Billboard, Bus, Train, Airport)																
Influencer Marketing																
Micro														\$ 1,250		0.25%
Mid-Tier														\$ 2,500		0.75%
Events																
Berlin Fair														\$ 2,280		0.14%
Terryville Lions Country Fair														\$ 2,800		0.17%
Minnesota State Fair														\$ 25,000		1.50%
USA Lacrosse Convention														\$ 4,350		0.26%
Athletic Business Conference & Expo														\$ 2,850		0.17%
Betting on Sports America Expo/Conference														\$ 10,000		0.60%
NBC4 Fitness & Health Expo														\$ 3,160		0.19%
Monumental Health and Fitness Expo														\$ 6,750		0.41%
Guerrilla Marketing																
Dunk Tank (Circus World)														\$ 17,880		1.07%
Prize Booth (Circus World)														\$ 12,880		0.77%
Turkey Canned Food Drive														\$ 1,640		0.10%
Magazines																
Sports Illustrated Kids														\$ 37,800	\$ 36.84	3.29%
Alive														\$ 23,950	\$ 54.43	1.41%
Outside														\$ 83,350	\$ 177.34	1.51%
Earned:																
Word of Mouth														\$ -		0.28%
Public Relations														\$ 10,000		1.00%
Magazine (Sports Illustrated, USA Today: Sports Weekly, Health)																
Blog (Sports Unlimited, Mighty Kicks, i9 Sports, Sports4Kids)																
Carryover																2.00%
Owned:																
Own Website														\$ 1,500		0.00%
Total Pull														\$ 432,690		23.19%
PUSH																
Trade Shows																
Boston Mania (Boston, MA)														\$ 6,799		0.00%
IDEA World Convention (Las Vegas, NV)														\$ 4,068		0.00%
Trade Magazine Ads																
National Fitness Trade Journal														\$ 3,300	\$ 188.89	0.06%
Total Push														\$ 14,167		0.06%
Total IMC Schedule														\$ 446,857		23.25%

Year 4 IMC Schedule - Impact + Target Market Size = 15,921,295 HHs		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total Cost	CPM	Awareness Target Market
PULL																
Paid:																
Online Advertising														\$ 38,500		3.00%
Outdoor/Transit														\$ 84,419		2.53%
New Haven, CT (Billboard, Bus, Train, Airport)														\$ 59,831		1.80%
Milwaukee, WI (Billboard, Bus, Train, Airport)																
Influencer Marketing																
Micro														\$ 1,250		0.25%
Micro														\$ 1,250		0.25%
Mid-Tier														\$ 2,500		0.75%
Mid-Tier														\$ 2,500		0.75%
Events																
Berlin Fair														\$ 2,280		0.14%
Terryville Lions Country Fair														\$ 2,800		0.17%
Minnesota State Fair														\$ 25,000		1.50%
USA Lacrosse Convention														\$ 4,350		0.26%
Athletic Business Conference & Expo														\$ 2,850		0.17%
Betting on Sports America Expo/Conference														\$ 10,000		0.60%
NBC4 Fitness & Health Expo														\$ 3,160		0.19%
Monumental Health and Fitness Expo														\$ 6,750		0.41%
Guerrilla Marketing																
Dunk Tank (Circus World)														\$ 17,880		1.07%
Prize Booth (Circus World)														\$ 12,880		0.77%
Turkey Canned Food Drive														\$ 1,640		0.10%
Magazines																
Sports Illustrated Kids														\$ 37,800	\$ 36.84	3.29%
Alive														\$ 23,950	\$ 54.43	1.41%
Outside														\$ 83,350	\$ 177.34	1.51%
Earned:																
Word of Mouth														\$ -		0.81%
Public Relations														\$ 10,000		1.00%
Magazine (Sports Illustrated, USA Today: Sports Weekly, Health)																
Blog (Sports Unlimited, Mighty Kicks, i9 Sports, Sports4Kids)																
Carryover																2.00%
Owned:																
Own Website														\$ 1,500		0.00%
Total Pull														\$ 436,440		24.72%
PUSH																
Trade Shows																
Boston Mania (Boston, MA)														\$ 6,799		0.00%
IDEA World Convention (Las Vegas, NV)														\$ 4,068		0.00%
Trade Magazine Ads																
National Fitness Trade Journal														\$ 3,300	\$ 188.89	0.06%
Total Push														\$ 14,167		0.06%
Total IMC Schedule														\$ 450,607		24.78%

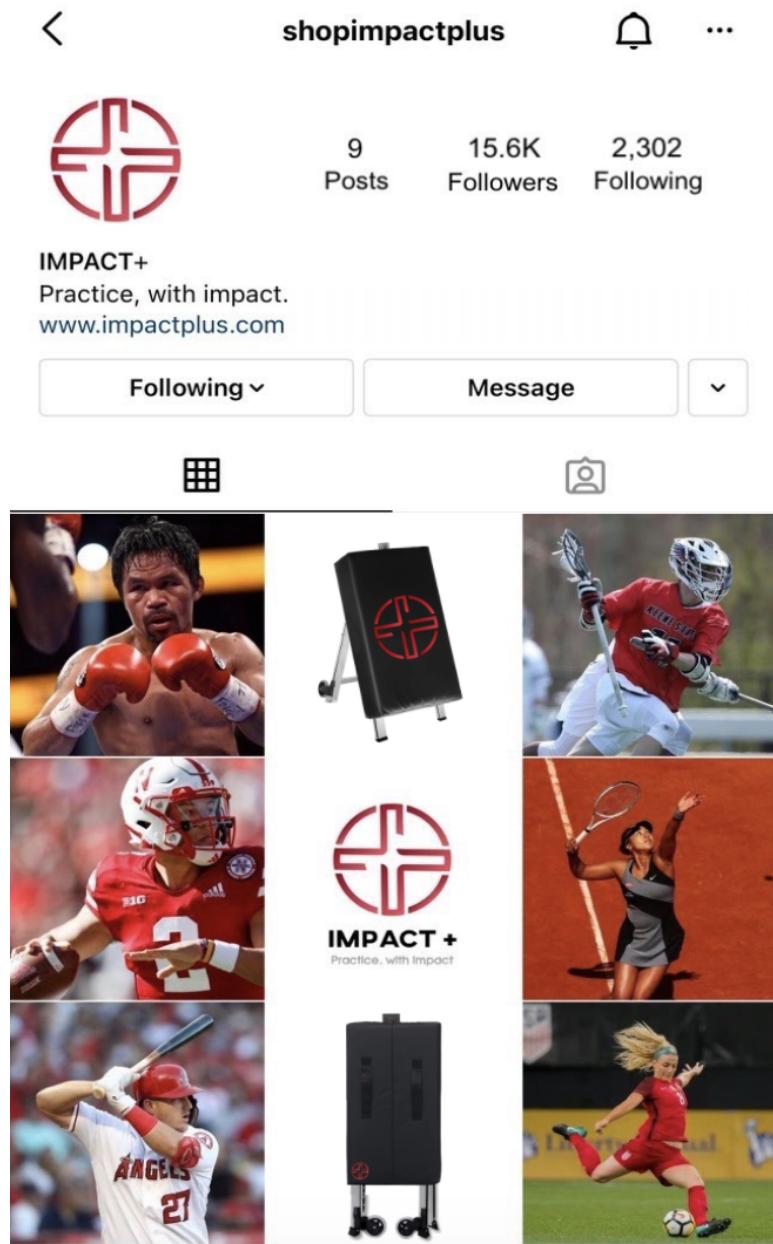
Year 5 IMC Schedule - Impact +		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total Cost	CPM	Awareness Target Market
Target Market Size = 15,981,113 HHs																
PULL																
Paid:																
Online Advertising														\$ 40,600		3.00%
Outdoor/Transit																
Columbus, OH (Billboard, Bus, Train, Airport)														\$ 57,623		1.73%
New Haven, CT (Billboard, Bus, Train, Airport)														\$ 84,419		2.53%
Milwaukee, WI (Billboard, Bus, Train, Airport)														\$ 59,831		1.80%
Influencer Marketing																
Mid-tier														\$ 2,500		1.00%
Macro														\$ 25,000		3.50%
Events																
Berlin Fair														\$ 2,280		0.14%
Terryville Lions Country Fair														\$ 2,800		0.17%
Minnesota State Fair														\$ 25,000		1.50%
USA Lacrosse Convention														\$ 4,350		0.26%
Athletic Business Conference & Expo														\$ 2,850		0.17%
Betting on Sports America Expo/Conference														\$ 10,000		0.60%
NBC4 Fitness & Health Expo														\$ 3,160		0.19%
Monumental Health and Fitness Expo														\$ 6,750		0.41%
Guerrilla Marketing																
Dunk Tank (Circus World)														\$ 17,880		1.07%
Prize Booth (Circus World)														\$ 12,880		0.77%
Turkey Canned Food Drive														\$ 1,640		0.10%
Magazines																
Sports Illustrated Kids														\$ 37,800	\$ 36.84	3.29%
Alive														\$ 23,950	\$ 54.43	1.41%
Outside														\$ 83,350	\$ 177.34	1.51%
Earned:																
Word of Mouth														\$ -		0.93%
Public Relations														\$ 10,000		1.00%
Magazine (Sports Illustrated, USA Today: Sports Weekly, Health)																
Blog (Sports Unlimited, Mighty Kicks, I9 Sports, Sports4Kids)																2.00%
Carryover																
Owned:																
Own Website														\$ 1,500		0.00%
Total Pull														\$ 516,163		29.07%
PUSH																
Trade Shows																
IDEA World Convention (Las Vegas, NV)														\$ 4,068		0.00%
Total Push														\$ 4,068		0.00%
Total IMC Schedule														\$ 520,231		29.07%

MK Appendix 4: Impact+ Billboard Creative



MK Appendix 5: Impact+ Bus Banner Creatives



MK Appendix 6: Impact+ Social Media Creative

MK Appendix 7: Impact+ Website Creatives

The image displays three distinct landing page variations for the Impact+ website, each featuring a large central photograph and a call-to-action section.

Top Variation: Shows a woman in a blue athletic outfit playing tennis. A black Impact+ training pad is positioned to her left. The text "PRACTICE, WITH IMPACT" is overlaid on the image. The top navigation bar includes links for Home, Shop, About, Gallery, Contact, and a shopping cart icon.

Middle Variation: Shows a football player in a white and red uniform (number 86) throwing a football. The background features palm trees and a yellow car. To the right, a red sidebar contains the heading "WHAT IS IMPACT +" and a detailed description of the product's features and benefits.

Bottom Variation: Shows a contact form titled "CONTACT US". It includes fields for Name, Email, Phone, Subject, and Message, along with a "Submit" button. Below the form, a message says "Thanks for submitting!" and there is an "Available on Amazon.com" badge. Social media icons for Facebook, Twitter, and LinkedIn are at the bottom, along with a "Let's Chat!" button.

MK Appendix 8: Impact+ Event Poster Creative

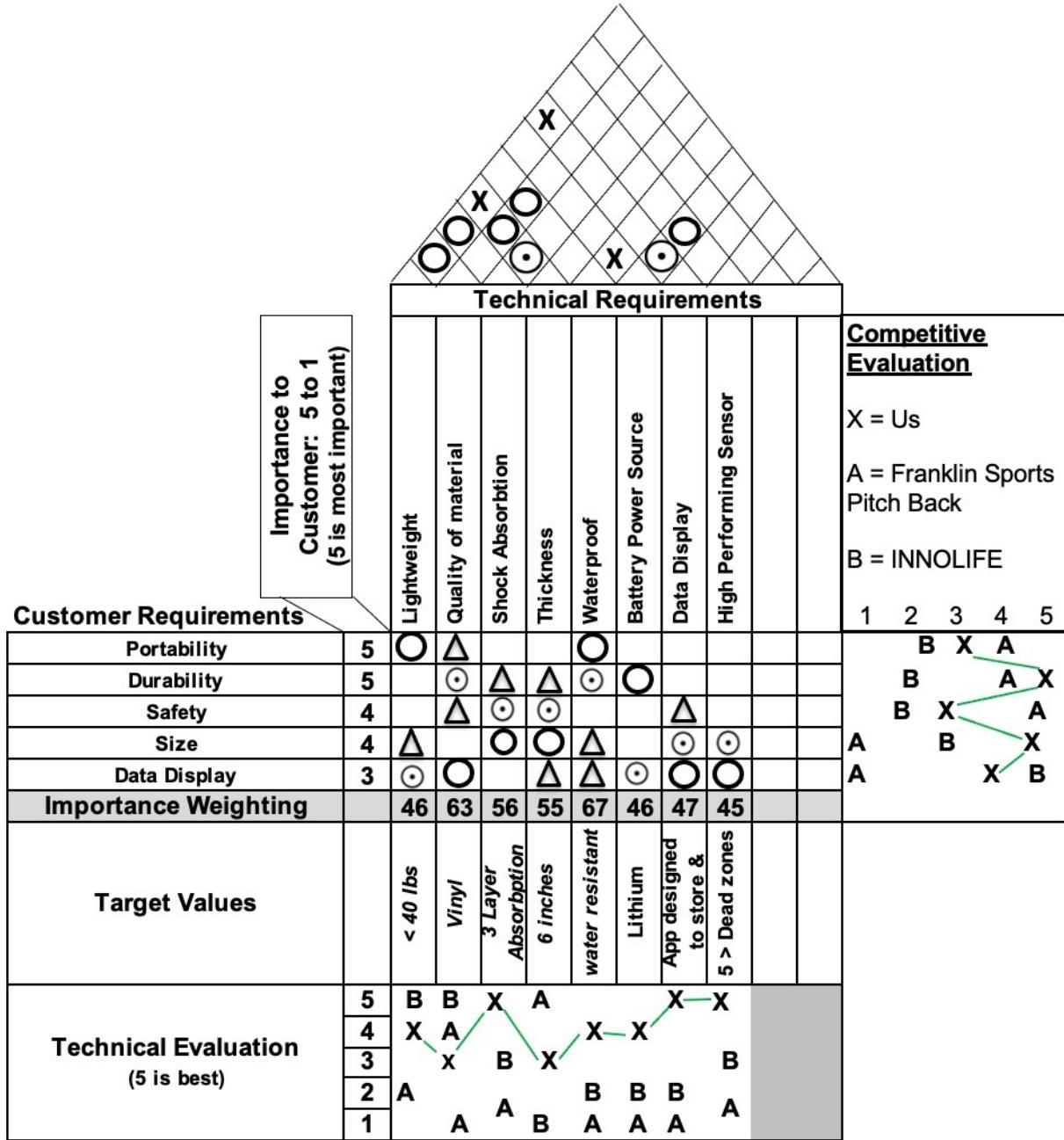


MK Appendix 9: Impact + Convention Booth Creative



Operations Appendices

OM Appendix 1: House of Quality



OM Appendix 2: Aggregate Planning Hybrid Strategies for Year 1 and 5

Aggregate Planning Yr 1 Hybrid Strategy

Period	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
	1	2	3	4	5	6	7	8	9	10	11	12	100%
Forecast	6%	6%	9%	10%	9%	7%	7%	10%	10%	6%	10%	10%	100%
	1,232	1,232	1,849	2,054	1,849	1,438	1,438	2,054	2,054	1,232	2,054	2,054	20,540
Output													
Regular	1,780	1,780	1,780	1,780	1,780	1,780	1,780	1,780	1,780	1,780	1,780	1,780	21,361
Overtime	-	-	-	154	-	-	-	154	154	-	154	154	770
Part Time	-	-	-	-	-	-	-	-	-	-	-	-	-
Subcontract	-	-	-	-	-	-	-	-	-	-	-	-	-
Output - Forecast	548	548	(69)	(120)	(69)	342	342	(120)	(120)	548	(120)	(120)	1,591
Inventory													
Beginning	-	548	1,096	1,027	907	839	1,181	1,523	1,403	1,283	1,831	1,711	
Ending	1,591	548	1,096	1,027	907	839	1,181	1,523	1,403	1,283	1,831	1,711	1,591
Average	274	822	1,062	967	873	1,010	1,352	1,463	1,343	1,557	1,771	1,651	1,179
Costs:													
Regular @	\$11.00	7,627	7,627	7,627	7,627	7,627	7,627	7,627	7,627	7,627	7,627	7,627	91,520
Overtime @	\$16.50	-	-	990	-	-	-	990	990	-	990	990	4,948
Part Time @	\$22.00	-	-	-	-	-	-	-	-	-	-	-	-
Subcontract @	\$34.00	-	-	-	-	-	-	-	-	-	-	-	-
Inventory @	\$1.77	484	1,453	1,877	1,710	1,543	1,784	2,389	2,586	2,374	2,752	3,130	2,919
Hire/Lay off	\$ 16,516												\$ 16,516
Total	\$ 8,111	\$ 9,080	\$ 9,503	\$ 10,326	\$ 9,170	\$ 9,411	\$ 10,016	\$ 11,202	\$ 10,990	\$ 10,379	\$ 11,747	\$ 11,535	\$ 137,985
Cost Per Unit in Labor	\$ 5.33	\$ 5.87	\$ 6.11	\$ 6.05	\$ 5.92	\$ 6.06	\$ 6.40	\$ 6.50	\$ 6.39	\$ 6.60	\$ 6.79	\$ 6.68	

Aggregate Planning Yr 5 Hybrid Strategy

Period	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
	1	2	3	4	5	6	7	8	9	10	11	12	100%
Forecast	6%	6%	9%	10%	9%	7%	7%	10%	10%	6%	10%	10%	100%
	8,242	8,242	12,363	13,737	12,363	9,616	9,616	13,737	13,737	8,242	13,737	13,737	137,369
Output													
Regular	11,905	11,905	11,905	11,905	11,905	11,905	11,905	11,905	11,905	11,905	11,905	11,905	142,860
Overtime	-	-	-	1,030	-	-	-	1,030	1,030	-	1,030	1,030	5,150
Part Time	-	-	-	-	-	-	-	-	-	-	-	-	-
Subcontract	-	-	-	-	-	-	-	-	-	-	-	-	-
Output - Forecast	3,663	3,663	(458)	(802)	(458)	2,289	2,289	(802)	(802)	3,663	(802)	(802)	10,641
Inventory													
Beginning	44,265	44,265	47,928	51,591	51,133	50,331	49,873	52,162	54,451	53,649	52,847	56,510	55,708
Ending	54,906	47,928	51,591	51,133	50,331	49,873	52,162	54,451	53,649	52,847	56,510	55,708	54,906
Average	46,097	49,760	51,362	50,732	50,102	51,018	53,307	54,050	53,248	54,679	56,109	55,307	52,148
Costs:													
Regular @	\$12.14	33,682	33,682	33,682	33,682	33,682	33,682	33,682	33,682	33,682	33,682	33,682	404,182
Overtime @	\$18.22	-	-	18,764	-	-	18,764	18,764	18,764	-	18,764	18,764	93,819
Part Time @	\$24.29	-	-	-	-	-	-	-	-	-	-	-	-
Subcontract @	\$37.54	-	-	-	-	-	-	-	-	-	-	-	-
Inventory @	\$1.62	74,526	80,448	83,039	82,020	81,002	82,482	86,183	87,385	86,088	88,401	90,714	89,417
Hire/Lay off	\$ 24,774												\$ 24,774
Total	\$ 108,208	\$ 114,130	\$ 116,721	\$ 134,466	\$ 114,684	\$ 116,164	\$ 119,865	\$ 139,831	\$ 138,534	\$ 122,083	\$ 143,160	\$ 141,863	\$ 1,534,481
Cost Per Unit in Labor	\$ 9.26	\$ 9.76	\$ 9.98	\$ 10.56	\$ 9.81	\$ 9.93	\$ 10.24	\$ 10.97	\$ 10.87	\$ 10.43	\$ 11.23	\$ 11.13	

OM Appendix 3: Outbound Freight Year 1 to 5

Channel	# of Units	Weight of Shipment (lbs)	Miles	Cost per Ton	Total Cost
Y1					
Independent	1,476	29	569	\$0.16	\$2,605
Amazon	19,073	381	140	\$0.16	\$8,331
Y3					
Independent	7,848	157	569	\$0.16	\$13,933
Amazon	51,013	1,020	140	\$0.16	\$22,283
Chain Stores	27,469	549	834	\$0.16	\$71,459
Y5					
Independent	16,650	333	569	\$0.16	\$29,559
Amazon	41,626	833	140	\$0.16	\$18,182
Chain Stores	45,789	916	834	\$0.16	\$119,117
Mass Merchant	33,301	666	945	\$0.16	\$93,138

OM Appendix 4: Inbound Freight Year 1 to 5

Channel	Y1	Y2	Y3	Y4	Y5
Cost of Shipping from China to US	\$3,628	\$3,628	\$3,628	\$3,628	\$3,628
Distance from LA to Durham (mi)	2,518	2,518	2,518	2,518	2,518
Ton/mi Train Freight (1 ton)	\$0.05	\$0.05	\$0.05	\$0.05	\$0.05
Cost per Ton	\$128.42	\$128.42	\$128.42	\$128.42	\$128.42
Scrap	\$1.42	\$1.54	\$1.54	\$1.54	\$1.54
Ton per Year	4	5.85	16.81	19.36	26.75
Cost per Year	\$512	\$720	\$2,157	\$2,484	\$3,434
Total Shipping Cost/Unit	\$0.56	\$0.62	\$1.27	\$2.20	\$1.95

OM Appendix 5: SG&A Expenses Year 1 to 5

General & Admin startive	Y0	Y1	Y2	Y3	Y4	Y5
Salaries	\$ 45,500	\$ 198,000	\$ 243,493	\$ 701,585	\$ 755,054	\$ 844,877
Rent	\$ 33,750	\$ 135,000	\$ 135,000	\$ 135,000	\$ 135,000	\$ 135,000
Utilities	\$ 15,000	\$ 60,000	\$ 60,000	\$ 60,000	\$ 60,000	\$ 60,000
Employee Benefits	\$ 85,350	\$ 128,400	\$ 164,620	\$ 332,910	\$ 396,004	\$ 457,857
IS Expenses	\$ 149,859	\$ 31,773	\$ 66,971	\$ 147,653	\$ 76,027	\$ 68,919
Insurance	\$ 4,590	\$ 18,360	\$ 18,360	\$ 18,360	\$ 18,360	\$ 18,360
Janitorial Services	\$ 90,000	\$ 90,000	\$ 90,000	\$ 90,000	\$ 90,000	\$ 90,000
Total	\$ 424,049	\$ 661,533	\$ 778,443	\$ 1,485,508	\$ 1,530,446	\$ 1,675,013
G&A % Sales		24%	20%	13%	12%	10%

Sales	Y0	Y1	Y2	Y3	Y4	Y5
Advertising and Marketing expenses	\$ 18,619	\$ 124,127	\$ 135,707	\$ 446,857	\$ 450,607	\$ 520,231
Sales Rep (10% of rev)	\$ -	\$ 19,384	\$ 46,502	\$ 453,417	\$ 744,208	\$ 1,166,109
Total SG&A (including marketing)	\$ 442,668	\$ 805,044	\$ 960,652	\$ 2,385,782	\$ 2,725,260	\$ 3,361,353
SG&A % Sales		30%	24%	22%	22%	20%

Financial Appendices

FE Appendix 1: Start-up Period Expenses Breakdown

Initial Startup Costs (Startup Column Only)		
INITIAL INVESTMENT IN FIXED ASSETS		Start-up
Long Term Balance Sheet Items (Can be depreciated - includes IS equip & Factory/office buildout costs)	\$	567,720
INITIAL WORKING CAPITAL		
Cash (Additional Cash required in addition to Start Up costs)	\$	93,263
Raw Materials & Work in Process, Start-Up Period Only (Put Years 1-5 in table Below)	\$	123,257
Finished Goods Start-up Period Only (Put Years 1-5 in table Below)	\$	33,038
INITIAL OPERATING EXPENSES (TAX DEDUCTIBLE)		
Product Development (Prototype, engineer, etc.)	\$	100,000
Pre-Marketing Expenses (Marketing expenses before Year 1) See Sales Projection Tutorial	\$	18,619
All Other (Miscellaneous non depreciated expenses, additional salaries, Rent etc.)	\$	392,104
Total Start Up Operating Expenses	\$	510,723

FE Appendix 1 (cont.): Start-up Period Expenses Breakdown

Start-up Expenses	Costs	Description
Cash	\$93,263	Safety Cash (based on 1 month of Y1 income)
Plant	\$200,000	
Leasehold Improvements	\$300,000	
Long Term Fixed Assets	\$47,975	2 Band Saws, 4 Sewing Machine, 4 Workstations, 5 Conveyer Belt, 2 Metal Rolling Machines, & 2 Forklifts
Raw Materials	\$115,710	Materials for 1,781 Units: Foam, Battery, Sensors, Plywood, Frame, Radar Sensors, Vinyl, Wheels
Work In Process	\$7,547	111 Work in Process Units
Finished Goods	\$33,038	467 Finished Good Units
Prototyping	\$30,000	
Research & Development	\$70,000	
Yearly Labor	\$27,500	\$35/hr for 1 CEO
Hourly Labour	\$260,000	\$11/hr for 11 Factory Workers \$15/hr for 2 Office Workers
Hardware	\$19,100	1 Laptop, 15 Desktops, 1 Printer, 1 Photocopier, 1 Hi-end Networking Equipment
Software	\$117,089	Virtual Private Network, Firewall, ERP, PPS, Security, Backup, Cloud Storage, Credit Card Processing
Internet, Phone, Etc.	\$1,470	Internet, Organizational Phones, Security Cameras, Phone Services
Marketing	\$18,619	Market Research
Total Cost	\$1,328,000	

FE Appendix 2: Income Statement

Income Statement		Start-up	Year 1	Year 2	Year 3	Year 4	Year 5
(In US Dollars)							
Total Units		0	20,540	30,031	86,330	99,395	137,366
TOTAL REVENUES	\$	-	2,713,731	3,952,645	11,083,527	12,558,504	16,731,134
Variable Costs	\$	-	(1,389,843)	(1,974,608)	(5,540,322)	(6,340,130)	(8,543,831)
Fixed Production Costs (allocated Manufacturing overhead)	\$	-	(62,330)	(86,577)	(236,437)	(258,606)	(339,530)
TOTAL COST OF GOODS SOLD (Includes inbound shipping)	\$	-	(1,452,173)	(2,061,185)	(5,776,759)	(6,598,736)	(8,883,361)
GROSS PROFIT	\$	-	1,261,558	1,891,460	5,306,768	5,959,768	7,847,773
One-time Start Up Expenses	\$	(510,723)					
Administrative Overhead (salaries)	\$		(198,000)	(243,493)	(701,585)	(755,054)	(844,877)
General operating expenses not already part of COGS	\$		(720,870)	(847,565)	(1,932,130)	(2,102,988)	(2,343,885)
Marketing Expenses Excluding Mfg Reps Commission	\$		(124,127)	(135,707)	(446,857)	(450,607)	(520,231)
Manufacturer's Sales Reps Commission Expense (10%)	\$		(19,384)	(46,502)	(453,417)	(744,208)	(1,166,109)
Depreciation on original PP&E	\$		(56,772)	(56,772)	(56,772)	(56,772)	(56,772)
Depreciation on new PP&E (purchased after start-up)	\$			(505)	(1,484)	(10,098)	(10,803)
Earnings Before Tax	\$	(510,723)	\$ 142,406	\$ 560,917	\$ 1,714,523	\$ 1,840,041	\$ 2,905,097
Taxes	\$	-	\$ (38,449)	\$ (151,448)	\$ (462,921)	\$ (496,811)	\$ (784,376)
NET INCOME	\$	(510,723)	\$ 103,956	\$ 409,470	\$ 1,251,602	\$ 1,343,230	\$ 2,120,720

FE Appendix 3: Statement of Retained Earnings

Statement of Retained Earnings	Start-up	Year 1	Year 2	Year 3	Year 4	Year 5
Net Income	\$ (510,723)	\$ 103,956	\$ 409,470	\$ 1,251,602	\$ 1,343,230	\$ 2,120,720
<u>minus cash returned to investors (dividends)</u>	\$ -	\$ -	\$ (131,191)	\$ -	\$ (849,972)	\$ (917,291)
Increase (Decrease) in Retained Earnings	\$ (510,723)	\$ 103,956	\$ 278,278	\$ 1,251,602	\$ 493,258	\$ 1,203,429

FE Appendix 4: Balance Sheet

Balance Sheet		Time 0	Year 1	Year 2	Year 3	Year 4	Year 5
(In US Dollars)							
<i>Current Assets</i>							
Cash reserves	\$ 93,263	\$ 135,687	\$ 197,632	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000
Accounts Receivable		\$ 58,417	\$ 105,107	\$ 648,725	\$ 987,604	\$ 1,507,122	
Raw Materials and WIP	\$ 123,257	\$ 493,027	\$ 693,660	\$ 1,881,579	\$ 2,078,594	\$ 2,747,399	
Finished Goods Inventory	\$ 33,038	\$ 132,153	\$ 190,199	\$ 533,202	\$ 606,474	\$ 811,887	
Current Assets	\$ 249,558	\$ 819,283	\$ 1,186,597	\$ 3,363,505	\$ 3,972,673	\$ 5,366,408	
<i>Fixed Assets</i>							
Gross Fixed Assets	\$ 567,720	\$ 572,765	\$ 582,560	\$ 668,702	\$ 675,747	\$ 708,900	
Accumulated Depreciation	\$ -	\$ (56,772)	\$ (114,048)	\$ (172,304)	\$ (239,175)	\$ (306,749)	
Net Fixed Assets	\$ 567,720	\$ 515,993	\$ 468,511	\$ 496,398	\$ 436,572	\$ 402,150	
TOTAL ASSETS	\$ 817,277	\$ 1,335,276	\$ 1,655,108	\$ 3,859,903	\$ 4,409,245	\$ 5,768,558	
<i>Current Liabilities</i>							
Accounts Payable		\$ 99,084	\$ 140,638	\$ 394,157	\$ 450,242	\$ 606,125	
Current Liabilities	\$ -	\$ 99,084	\$ 140,638	\$ 394,157	\$ 450,242	\$ 606,125	
<i>Equity</i>							
Paid in Capital (Cumulative)	\$ 1,328,000	\$ 1,642,959	\$ 1,642,959	\$ 2,342,632	\$ 2,342,632	\$ 2,342,632	
Retained Earnings (cumulative)	\$ (510,723)	\$ (406,767)	\$ (128,489)	\$ 1,123,113	\$ 1,616,371	\$ 2,819,800	
Total Equity	\$ 817,277	\$ 1,236,192	\$ 1,514,470	\$ 3,465,745	\$ 3,959,003	\$ 5,162,433	
TOTAL LIABILITIES AND EQUITY	\$ 817,277	\$ 1,335,276	\$ 1,655,108	\$ 3,859,903	\$ 4,409,245	\$ 5,768,558	

FE Appendix 5: Statement of Cash Flows

FE Appendix 6: Financial Beta and Discount Rate

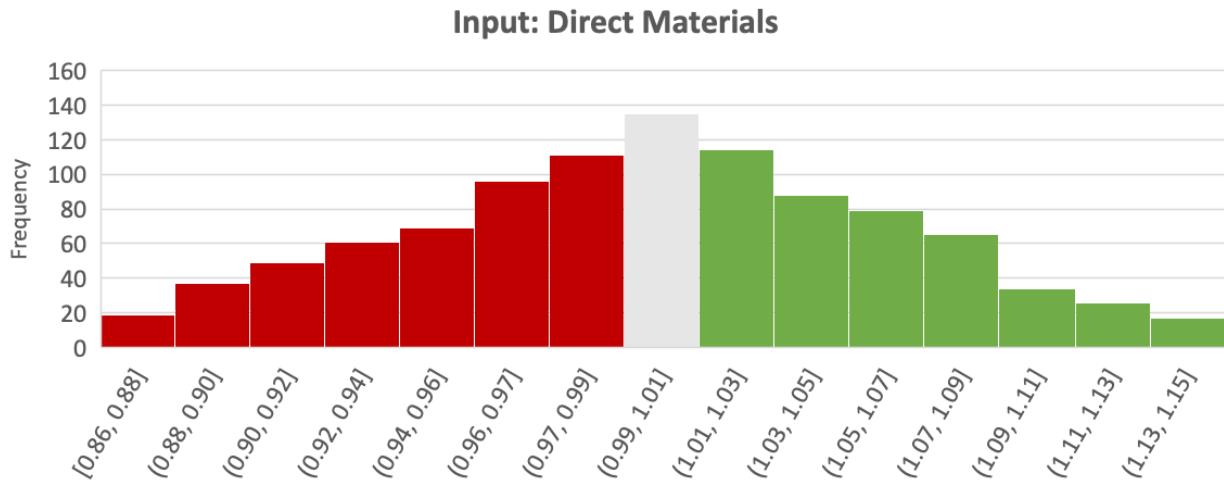
Comparable Companies	
Company	Beta
Johnson Outdoors	0.93
Nautilus	1.80
Escalade Inc.	0.80
Acushnet Holdings Corp	0.81
Dick's Sporting Goods	1.79

Impact+ CAPM	
Rf	1.78%
Risk premium	6.70%
Beta	1.23
Size premium	6.03%
Re	16.02%

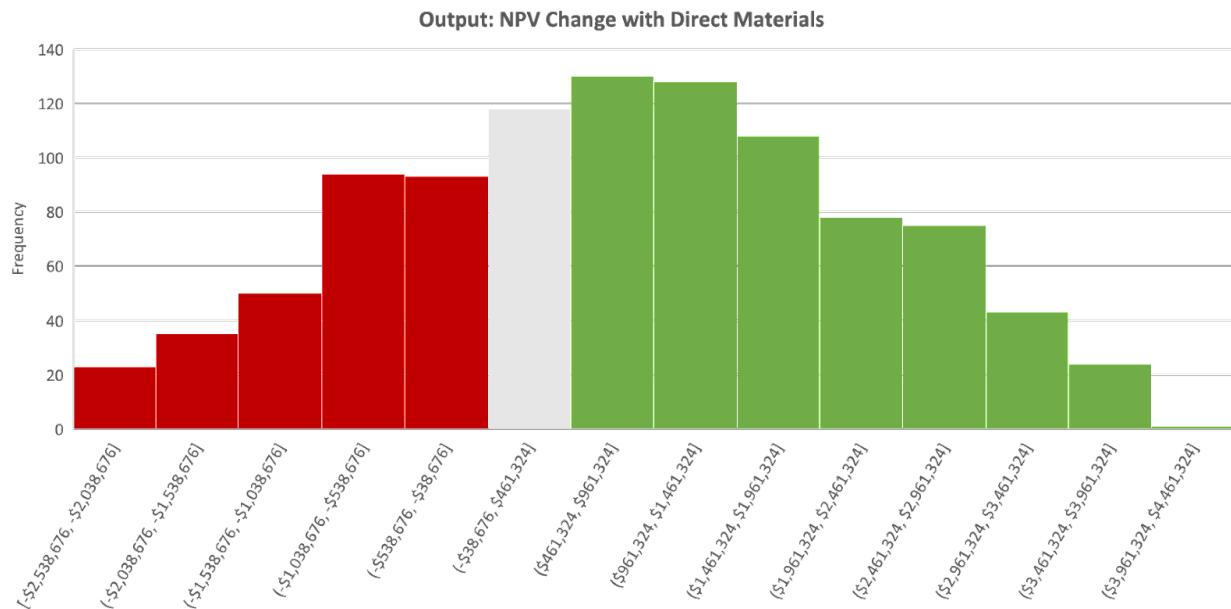
CAPM Assumptions	
Risk-free rate	1.78%
Market risk	6.70%
Size Premium	6.03%

Cross Function Risk Management Appendices

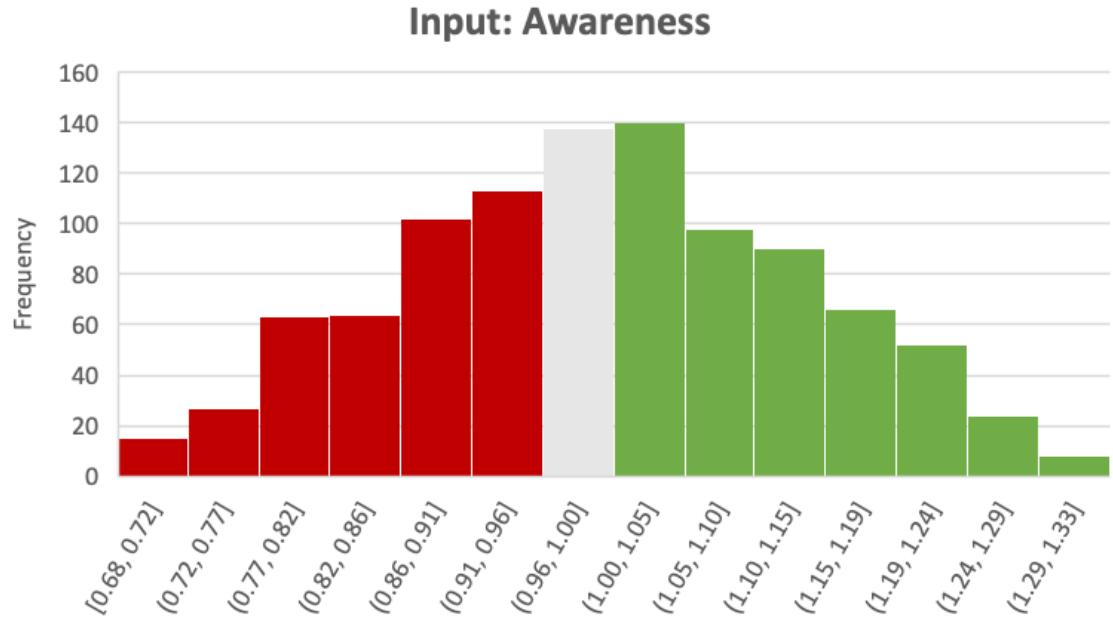
QM Appendix 1: Direct Materials per Unit Input Distribution



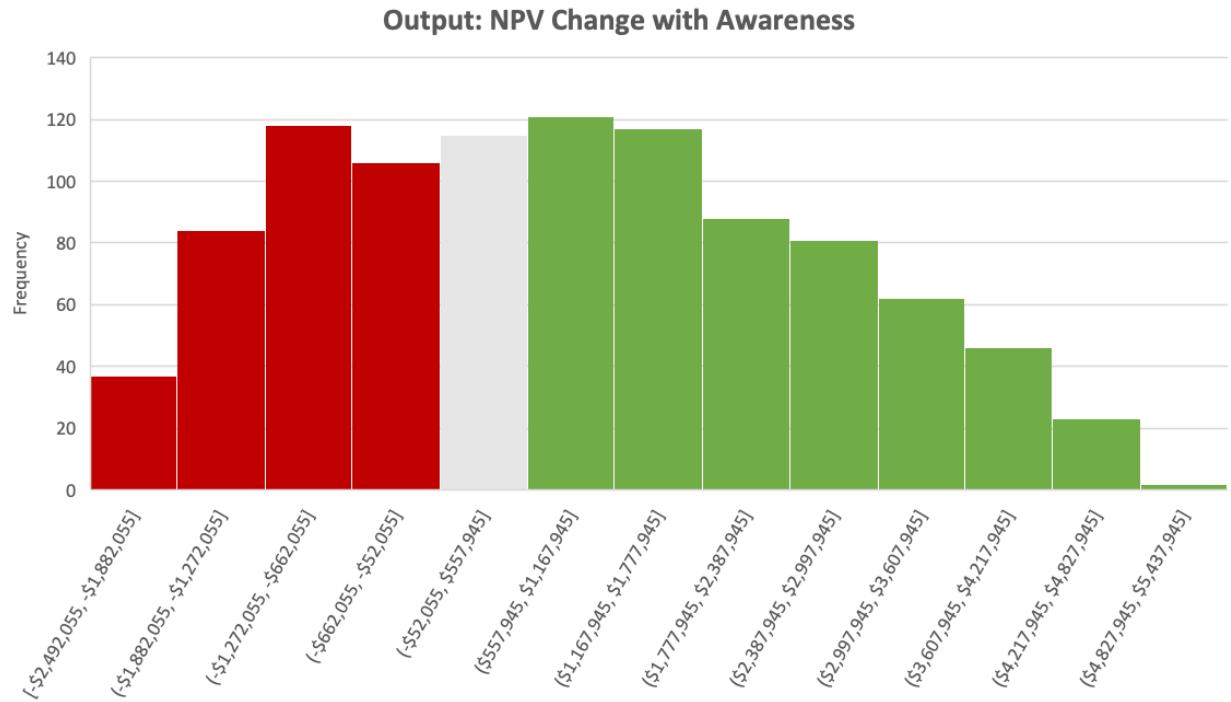
QM Appendix 2: Direct Materials per Unit NPV Output Distribution



QM Appendix 3: Awareness Input Distribution

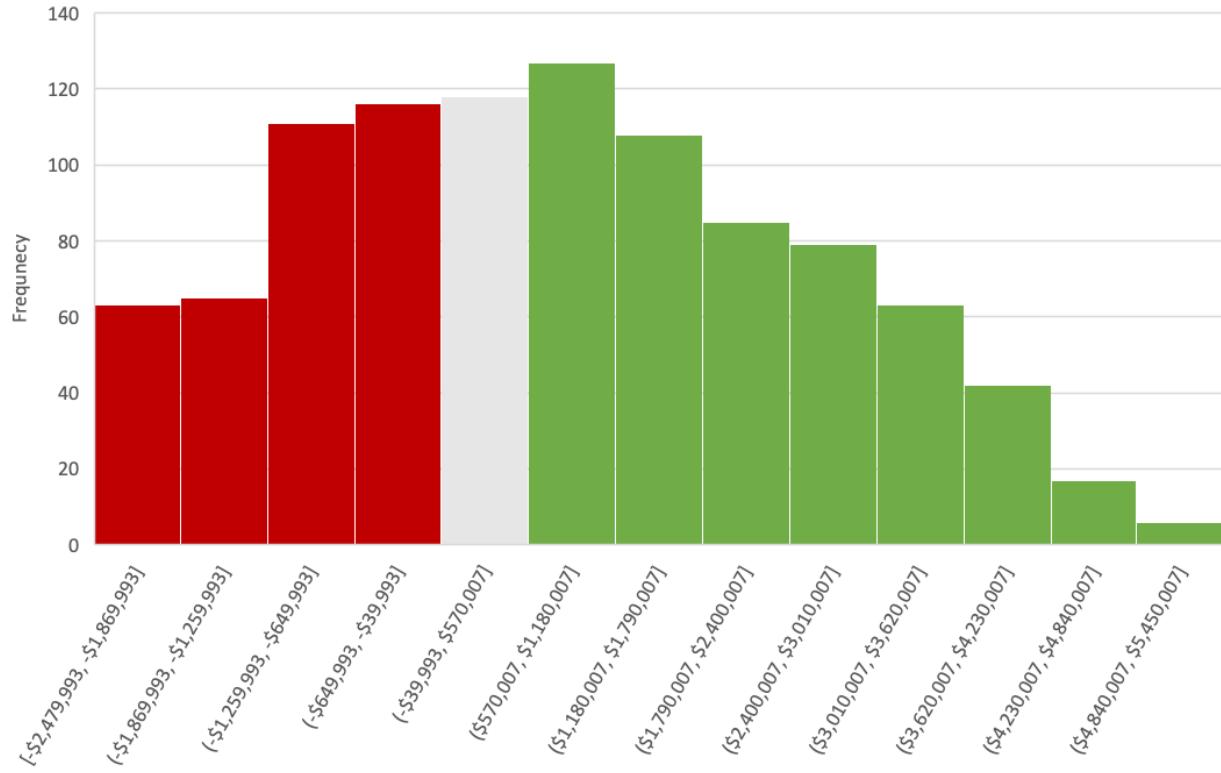


QM Appendix 4: Awareness NPV Output Distribution



QM Appendix 5: All Variables NPV Output Distribution

Output: NPV Change with All Variables



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NEW PRODUCT QUESTIONNAIRE

Introductory Statement

We are Boston University, Questrom School of Business, students gathering opinions for a business plan that we are doing as a school project.

Please answer the following questions as honestly as possible. Our group intends to use your responses to this survey to guide our product design in the right direction.

Your survey responses are kept anonymous and confidential. It is preferred to have you taken the survey on desktop/tablet devices. If you are taking this survey from a mobile phone, please turn your phone horizontally.

Questions

1. Do you have children under 18 that play sports?
 - a. Yes
 - b. No

Impact+ Description

Athletes spend a lot of time and money working to improve their sport outside of practice; however, without a coach present, athletes don't have the input and feedback needed to make improvements.

Impact+ is a multi-use pad that uses data analytics to relay feedback in real time, offering the experience found in the expensive state-of-the-art facilities. Measure the force, positioning, and speed of your sports' impact from the comfort of your home garage or backyard.

Perfect for all the impact sports popular in your household, Impact+ is the durable sports enhancement tool that your child needs to be this season's MVP.

Photos of Impact+



2. Now that you have reviewed our product concept, how interested would you be in this product if it became available?

Not at All Interested	Somewhat Interested	Interested	Very Interested	Extremely Interested
<input type="checkbox"/>				

3. How much would you be willing to pay for our product? _____

4. At the price you just indicated above, what is the likelihood that you will buy the product?

Definitely Not Buy	Probably Not Buy	Not Sure	Probably Buy	Definitely Buy
<input type="checkbox"/>				

5. Now that you have reviewed our product concept, how much would you expect to see this product sold for at retail?

- a. Between \$200-\$279
- b. Between \$280-\$359
- c. Between \$360-\$439
- d. Between \$440-\$519
- e. Between \$520-\$599

6. At the price you just indicated above, what is the likelihood that you will buy the product?

Definitely Not Buy	Probably Not Buy	Not Sure	Probably Buy	Definitely Buy
<input type="checkbox"/>				

7. What sports does your child(ren) play? Note: If your child is over 18 years old, please answer all the following questions as if they were still under 18 years old and playing sports.

- Baseball
- Football
- Soccer
- Tennis

- Lacrosse
- Martial arts
- Other (Please list): _____

8. If you had to estimate, how much do you spend annually on their sport equipment per child?
- \$0
 - \$1-250
 - \$251-500
 - \$501-750
 - \$751-1,000
 - \$1,000+
9. Considering your most active child, how many times does your child practice sports weekly?
- 0 times a week
 - 1-2 times a week
 - 3-4 times a week
 - 5+ times a week
10. How many hours does your most active child spend in a typical sports practice?
- Less than 1 hour
 - 1-2 hours
 - More than 2 hours
11. Does your child practice sports indoors, outdoors, or both?
- Indoors
 - Outdoors
 - Both A and B
12. Where does your child spend the *most* time practicing?
- Facility (e.g., school, gym)
 - Local field/park
 - Home (indoors)
 - Home (outdoors)
13. How important are the following attributes to you when selecting exercise equipment?
[Check one box for each of the attributes listed]

	Not at All Important	Somewhat Important	Very Important
Durability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Portability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of Cleaning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Battery Life	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. On a scale of 1-5, how much value does each feature provide to your performance improvement? (1=not at all valuable, 5=extremely valuable)

- **Shock absorbent padding:** The ability for our product to prevent the projectile from bouncing back when thrown/kicke
- **Pressure data:** The ability for our product to measure the force of impact
- **Accuracy data:** The ability for our product to assign a target to users for target practice, which detects the accuracy during the session
- **Speed data:** The ability for our product to measure the speed of impact
- **Performance data storage & analysis:** The ability for our product to store past performance data on mobile app

	1 Not at all valuable	2	3 Maybe	4	5 Extremely valuable
(a) Shock absorbent padding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) Pressure data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) Accuracy data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) Speed data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e) Performance data storage and analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. Check one box that describes your agreement or disagreement with each statement listed below.

	Strongly Disagree	Disagree	I Don't Know	Agree	Strongly Agree
I am interested in my child's performance statistics	<input type="checkbox"/>				
I am willing to pay more to further my child's athletic career	<input type="checkbox"/>				
I am interested in attending my child's practices and/or games	<input type="checkbox"/>				

16. Several factors help improve sports performance. Rank the following factors according to how you believe they help improve sports performance. [Drag and drop]

- **Coach**
- **Time spent practicing**
- **Training camps**
- **Equipment**
- **Enjoyment**

Rank	
(1)	
(2)	
(3)	
(4)	
(5)	

17. If knowing the materials of our product are ethically sourced, would this change your intent to purchase?

- a. I would be significantly more likely to buy this product/ service
- b. I would be slightly more likely to buy this product/service
- c. My purchase intention would not change

18. If the company selling our product was to donate our product to underfunded sports teams in our local community, would this change your intent to purchase?

- a. I would be significantly more likely to buy this product/ service
- b. I would be slightly more likely to buy this product/service
- c. My purchase intention would not change

19. What is your age?

- a. Under 24 years old
- b. 24 to 34 years
- c. 35 to 44 years
- d. 45 to 54 years
- e. 55 to 64 years
- f. 65+ years

20. What is your gender?

- a. Male
- b. Female
- c. Non-binary
- d. Other
- e. Prefer not to say

21. What is your marital status?

- a. Single
- b. Married
- c. With a partner
- d. Prefer not to answer

22. What is your annual household income?

- a. \$35,001-\$60,000
- b. \$60,001-\$75,000
- c. \$75,001-\$90,000
- d. \$90,001-\$105,000
- e. \$105,001-\$120,000
- f. \$120,000+
- g. Prefer not to answer

23. How many children do you have?

- a. 1
- b. 2-3
- c. 4-5
- d. 6+

24. Of your children, how many play sports?

- a. 1
- b. 2-3
- c. 4-5
- d. 6+

25. What city do you live in? _____

26. What state do you live in? _____

27. What is your zip code? _____

Concluding Statement

We thank you for your time spent taking this survey. Your response has been recorded.