

PupPal

C2T4 Spring 2021

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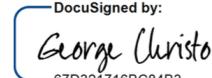
Authenticity Statement and IP Statement

This business plan is the original work of the undersigned. All facts and figures are authentic. All contributions from others have been appropriately acknowledged. We have not reviewed or used any past Core plans in any way in the development of our plan. We did not misrepresent ourselves to suppliers or to anyone else who contributed information to this plan.

We each understand that the ideas, analysis and text contained in our plan are the collective intellectual property of our team.

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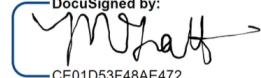
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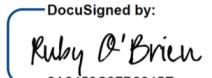
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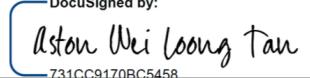
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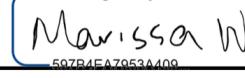
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Executive Summary

Play while you're away! PupPal serves as a fun, innovative way for dog-owning families to watch and play with their tail-wagging best friend! The product is an all-inclusive bundle with a dog-safe gyroscopic ball, camera, charging dock, and an accompanying application for remote control. On-the-go professionals can readily check-in with their dog at work, and families looking for Sunday afternoon fun will have hours of entertainment on their hands!

Whether they are at the office during a busy weekday or on a day trip, owners can easily tap into the PupPal app, where they can monitor their dog through the adjustable camera and move the ball about the designated play room. Unlike other pet monitoring cameras that only allow you to passively monitor, PupPal enables owners to *actively* engage with their dogs while checking up on them.

PupPal's target market includes Millennial and Gen-X owners of primarily medium-to-large sized dogs who are willing to spoil their pet with more expensive products. This amounts to a total of 16.6 million individuals, a segment of which will contribute to year 1 and year 5 manufacturing revenues of \$2.16 million and \$11 million respectively. Although we are primarily targeting Millennial and Gen-X owners of medium-to-large sized dogs, we are confident that our product will be able to satisfy the surveillance and entertainment needs of pet owners.

PupPal will be sold online (primarily through Amazon) and at independent retailers (Ciao Bow Wow!, TailWaggers, Bentley's Pet Stuff & Dog Bar) in the first two years after launch. The independent retailers that were chosen are positioned primarily in major cities and high-income neighborhoods across the country. We also chose to position our product in stores that have a reputation for selling high-end pet products. PupPal will expand and be distributed through PetCo and Chewy from year 3 onwards, and through Target from year 4 onwards. Our decision to expand into Target is supported by the statistic that 70% of Target customers are pet owners.¹ Furthermore, Target retailers will feature designated pet departments with clean and high-quality display areas for our product.

¹ "Your Four-Legged Friends Are Sure to Give Target's New Pet Assortment Two Paws Up," Target Corporate, accessed April 25, 2021, <https://corporate.target.com/article/2017/08/new-pet-assortment>.

After intensive research, PupPal found the best retail price for our unique product to average \$300. We took into consideration customer preferences from our surveys and all variable costs to reach this decision. On average, we believe that \$165 is the most ideal manufacturing price as it still allows our company to generate attractive profits. As such, we expect to sell approximately 12,000 PupPals and receive \$2.2 million in revenues in year 1, and approximately 71,400 PupPals and receive \$11 million in revenues in year 5.

PupPal's manufacturing facility will be 10,000 sq/ft and will be located on 1225 W 8th Street, Kansas City, Missouri. This location is 3 minutes away from the Kansas City railroad, making it convenient to retrieve raw materials for our production. Furthermore, our facility is 5 minutes away from the Interstate 70 highway, which spans three quarters of the country with major connections to surrounding interstates, allowing for easy distribution to our retailers.

In regards to staffing, we will employ 8 workers at our manufacturing facility to operate our machines from years 1 to 5. Starting out, we will have 2 assembly workers to assemble our product for years 1 and 2. As demand increases, we will employ more assembly workers (4 in year 3; 6 in year 4; 9 in year 5) to accommodate for increasing demand over the years. We also intend to employ part-time workers to help produce enough units to match our demand during the peak times of each year.

PupPal will require an investment of \$1.6 million to begin operations and sustain our product's life-cycle, of which \$250,000 will be funded by friends and family. The remaining \$1.33 million is required to cover necessary expenditures during our pre-growth stage. We forecast rapid growth in year 3 due to a threefold increase in demand from year 2. PupPal expects positive cash flows beginning in year 2, which facilitates dividend payouts to our investors.

We expect an Internal Rate of Return (IRR) of 60% and a Net Present Value (NPV) of \$2.7 million. We believe that PupPal makes for a good investment as the pet accessories market is expected to continue to grow and be profitable. Investors will receive their full investment back by year 4, with total returns amounting over \$3 million. Therefore, we are confident we can provide a significant return to our investors and create a unique brand in the pet accessories market.

As with all businesses, there are many risks associated with entering a new industry or creating a new product line. However, it is essential for us at PupPal to understand

the unique risks that we will have to undergo as we expand our market presence and awareness to target consumers.

The largest qualitative risks for our business include product obsolescence, lawsuits, and poor camera quality. To lessen the risk of poor camera quality, which is primarily dependent on the customer's WiFi connectivity, we intend to inform our customers of optimal strategies for better connectivity (camera placement in relation to room, ball, and wifi router) on an instruction manual included in the packaging and on the PupPal application. To alleviate the risk of lawsuits, we will offer a one-year product warranty and will put our products through a myriad of test controls, administered by the plant manager and mechanical engineer in years 1 and 2 and the quality assurance manager thereafter.

Some of the quantitative variables with the highest risks are segment size, awareness, and direct material cost per unit. To combat the uncertainties in variance regarding segment size and awareness, we plan to use our pre-marketing expenses to conduct more extensive market research. This allows us to use more primary data and purchase syndicated data. Further risk mitigation strategies include investing more into the publicity of our product through magazines and other media outlets which will help raise awareness for our product.

To tackle the risk of changing direct material costs, we intend to manifest our value of building a tighter-knit community, firstly through our suppliers. To measure and ensure the success of our risk mitigation strategies, we intend to conduct quarterly surveys with consumers and throughout the supply chain. We will use the information derived from these surveys to assess whether further steps are needed to successfully mitigate the risks involved in conducting our business.

PupPal intends to enter the pet accessories industry as a disruptor, and we believe that our innovation will revolutionize the way people will watch and play with their dogs. Friends and family have contributed \$250,000 to help establish what we foresee to be a successful venture. We are seeking an additional investment of \$1.33 million with no additional subsequent investments to jumpstart our operations and build towards our goal of bringing owners and their dogs even closer together.

Overview

Product Description

The PupPal Experience Captures Comfort, Connectivity, and Convenience

Intro Exhibit 1: PupPal Concept, Including Ball & Playcam



PupPal is an enhanced way for owners to maintain interaction with their dogs while being away from home. As previously stated, included with the packaging will be the gyroscopic ball, playcam (camera), charging dock, and an access link to our companion app. The gyroscopic ball will be hermetically sealed with a durable casing. It will also house a speaker, a variety of playable pre-set sounds (e.g. squeaks, clicks,

high-pitched sounds, soothing sounds) at the tap of a button on the app to draw your dog's attention². Our playcam, which is advised to be set within the confines of the dog's play area, will function as the hub for all controls. It will send in live updates to the app by way of WiFi connection, and it will connect to the ball for in-app remote control using Bluetooth.

Mission Statement

PupPal is a startup dedicated to enriching the connection and easing the distance between an owner and their dog. PupPal functions with convenience in mind, being there for you whenever you need to ensure your dog's well-being and entertainment.

Values

Here at PupPal, we take pride in innovation, building a tighter-knit community for dog fanatics, free expression, and, most importantly, fun for all ages!

Brand Character

PupPal's brand character is versatile yet casual, reassuring, warmhearted and playful.

² Courtney Emken, "Do Dogs Respond Better to Certain Names?," DogBoy's Dog Ranch, March 29, 2017, <https://www.dogboys.com/do-dogs-respond-better-to-certain-names/>.

Environmental Trends

Societal Resurgence from the Pandemic Coincides with our Product's Purpose

Many trends are likely to positively impact our business, and we believe current social trends can be used for our greatest benefit. As we emerge from the Coronavirus pandemic, consumers will most certainly be looking forward to leaving their homes for day trips, running everyday errands, and most importantly, heading back to the office in-person. Coupled with the fact that first-time dog ownership has grown³ while in quarantine, we are very confident consumers will be looking for ways to keep their dogs busy while transitioning back to a normal lifestyle.

Nonetheless, many consumers have suffered some form of financial hardship⁴, leading them to be more price-sensitive. We plan to capture consumers who are willing to spend a premium and value the entertainment and innovation involved with the product. Our consumer research showed us that our primary segment of first-time dog owning millennials placed high value on corporate social responsibility initiatives. With a plan to leverage our social media channels and packaging to bring awareness and dynamic consumer participation in our CSR programs, we are confident our intentions will foster increased customer loyalty and positive word of mouth.

³ Published by Emma Bedford and Feb 9, “Impact of COVID-19 on Pet Ownership U.S. 2020,” Statista, February 9, 2021, <https://www.statista.com/statistics/1191395/pet-ownership-status-due-to-covid-19-in-the-us/>.

⁴ Juliana Menasce Horowitz, Anna Brown, and Rachel Minkin, “The COVID-19 Pandemic’s Long-Term Financial Impact,” Pew Research Center’s Social & Demographic Trends Project (Pew Research Center, March 24, 2021),

<https://www.pewresearch.org/social-trends/2021/03/05/a-year-into-the-pandemic-long-term-financial-impact-weighs-heavily-on-many-americans/>.

Corporate Social Responsibility Initiatives

PupPal is aware of the importance of incorporating corporate social responsibility initiatives into our unique selling proposition. Studies show that millennials place a premium on CSR efforts and do not value traditional advertising. More than 90% of millennials would switch brands to one associated with a social cause, as compared to the U.S. average of 85%.⁵ Studies show that 58% of consumers are willing to pay more for environmentally ethical products. Furthermore, 56% of consumers take more interest in companies committed to social responsibility.⁶ PupPal's CSR initiatives focus on the issues of animal abuse and sustainability. Considering our questionnaire results show a 3% increase in purchase intent based on these issues, we are highly confident that the following strategies will resonate with our target market.

Our initiative to combat animal abuse entails donating \$1 from each purchase to Best Friends, a non-profit company dedicated to ensuring the safety of homeless pets. We are also incorporating a description of the initiative on the packaging. This allows us to communicate the intent in an effective manner coinciding with our brand image.

Our second initiative is in line with promoting sustainability through a recycling program. In alignment with our company values, we are constantly looking for new ways to innovate the pet accessories market. Since the high-density polyethylene casing is difficult to recycle, our customers will have the option to return their product when it reaches the end of their life cycle. We hope that this initiative will motivate consumers to recognize the impacts of their carbon footprint on the environment.

PupPal Will Donate \$1 from Every Purchase to Best Friends

For our donation efforts, we will have to consider the yearly implications they will create for our marketing expenses. The donation expense has been accounted for in our Integrated Marketing Communications schedule which is based off of our expected demand (MK Appendix 3-7). It is important to communicate our Best Friends initiative onto our packaging in an

⁵ Ryan Rudominer, "Corporate Social Responsibility Matters: Ignore Millennials at Your Peril," Center for Social Impact Communication, accessed April 25, 2021, <https://csic.georgetown.edu/magazine/corporate-social-responsibility-matters-ignore-millennials-peril/>.

⁶ Ryan Rudominer, "Corporate Social Responsibility Matters: Ignore Millennials at Your Peril," Center for Social Impact Communication, accessed April 25, 2021, <https://csic.georgetown.edu/magazine/corporate-social-responsibility-matters-ignore-millennials-peril/>.

aesthetically pleasing manner. The internal packaging will also be recyclable. With respect to our Integrated Marketing Communications schedule, PupPal is placing half-page CSR advertisements in the Best Friends magazine beginning in year 3 (MK Appendix 5-7).

PupPal Values Sustainability Through Implementing a Recycling Program

Our second initiative relies heavily on our operations supply chain. We estimate that 15% of our customers will participate in the recycling program, translating to an estimated 1,700 PupPal products in year 1. We will not account for large change inventory costs, as we will melt down used products once received. We anticipate the number of returns will grow as awareness and purchase intent increase across the five-year span. For each return, we expect primary damage to be on the encasing with scratches and bite marks. Repurposing damaged polyethylene will lower our direct materials cost beginning in year 2 onward. If the returned product's inner mechanisms no longer function properly, it will be either repurposed or scrapped accordingly. Labor costs will remain the same, as we do not plan to put workers in overtime or add part-time workers to remanufacture recycled products.

PupPal Will Utilize Various Channels to Communicate Our CSR Initiatives

We are confident that our communication channels, including magazines, packaging, social media, and online presence will represent our brand image to promote our CSR initiatives. Research has shown us that communicating CSR initiatives are most effective when placed directly on packaging materials, generating an average increase in initiative awareness by 19%, 14% for advertising, and 13% for social media.⁷ We plan to create a social media marketing campaign dedicated to promoting our CSR initiatives to increase participation and purchase intent. This will also align with our magazine advertisement placements.

In all, our CSR initiatives will ideally create a sense of community where our consumers can share their own efforts to combat animal abuse as well as the easiness of the recycling program. We truly believe our brand will foster a sense of comfort for dog owners, first-timers and seasoned ones alike, to voice their experiences and concerns.

⁷ “Companies' Most Effective CSR Info Communication Channels, Per Consumers,” Marketing Charts, June 1, 2015,
<https://www.marketingcharts.com/brand-related-55065#:~:text=Companies%20Most%20Effective%20CSR%20Info%20Communication%20Channels%2C%20Per%20Consumers,-June%201%2C%202015&text=Notes%3A%20How%20should%20companies%20communicate,as%20the%20most%20effective%20channel>.



Marketing

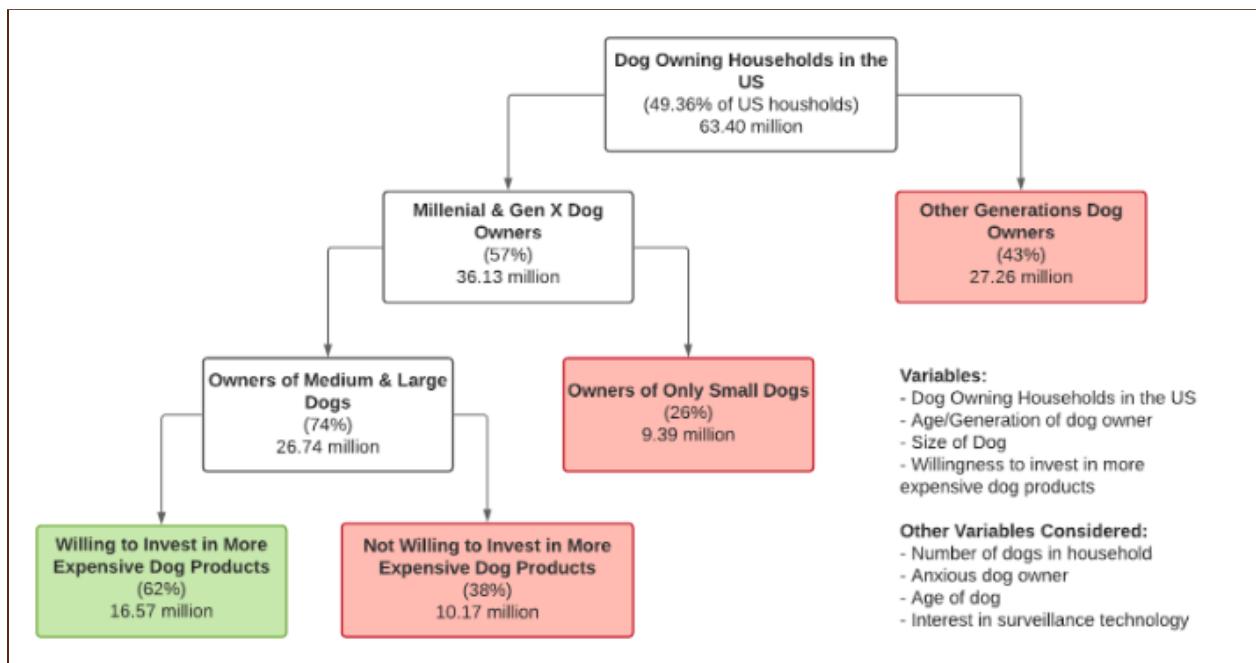


Marketing

Target Market

PupPal's marketing efforts will communicate ourselves as an innovative, technologically-minded company with the elements of playfulness and fun. We want consumers to understand the sense of entertainment and comfort they achieve by connecting them to their dog when away from home. To create said appeal, we will be utilizing an extensive Integrated Marketing Communications schedule, in which we chose the highest awareness-generating mediums for our intended target audience. After researching our segments, we have created profiles based on our targets: "Professional Millennials" and "Middle-Aged Suburban Parents". We found that magazines, fairs and events, trade shows and magazines, online media, creative ventures, blogs, websites, and social media initiatives would best suit our distribution strategy.

MK Exhibit 1: Segmentation Tree and Variables



Target Market Combines Professional Millennials and Middle-Aged Suburban Parents

To pinpoint a target market, we considered eight different variables, including behavioral, psychographic, and demographic characteristics. PupPal places its brand characteristics on tech-savvy mindedness. This means our target consumers must be both proficient in technology and have the means to purchase our product. To capture these groups, we began by segmenting dog-owning households in America by generation, choosing Millennials and Gen-X (combined

36 million individuals).

We further segmented based on targets profiles, choosing “The Professional Millennial” due to their technological familiarity, proneness to be away from their home, and increased purchasing power (MK Appendix 1). We also chose the “Middle-Aged Suburban Parent” for their attraction to familial entertainment and the likelihood they are homeowners. With contrasting playstyles, we believe that these two profiles encompass a majority of the customers interested in our product.

After isolating, then combining these two profiles, we further segmented based on dog size. PupPal would not be ideal for a small dog since they might not be able to fully grip a 3-inch ball in their mouths, which is why we will target owners of medium to large-sized dogs (combined 27 million individuals). Lastly, we segmented based on an owner’s willingness to invest in expensive dog products (a total of 16.5 million individuals). This way, we could isolate groups that were both interested in the technology and could afford the PupPal.

Research Allowed Us to Redefine Our Target and Construct our IMC Schedule

A takeaway from engaging with potential customers was their vision of different play styles whilst engaging with the PupPal. From our interviews, the two most popular play styles indicated were checking up and playing with the dog when away and active engagement with the PupPal while at home. As a result, we further divided our target segments based on these two types of engagement (MK Exhibit 1). One focuses on working professionals that are first-time dog owners and the second being families interested in playing with their dog while home.

Our target keeps in mind age groups who are comfortable with technology and those who tend to feel anxious for their dog when away from home. We believe more anxious owners have a stronger incentive to check-in on their dog while away, hence being more likely to purchase a product like PupPal. By focusing on this aspect, PupPal can market itself as a reassuring brand for concerned owners. Our target market also tends to be more incentivized to spoil their pets, making them more willing to purchase a PupPal.

Trends Reveal Shift in Consumer Attitudes, Channel Structure, and Seasonal Interest

Key trends within the pet industry are crucial to understanding how we will market our product. With the onset of the COVID-19 pandemic, there has been an increase in pet ownership,

with more families considering their pet as an integral part of their family. However, the pandemic has also increased unemployment, which has decreased many consumers' purchasing power, except those who are still seeking a premium product.⁸

In regards to product location, more companies in our industry are shifting away from niche pet stores to merchandisers and mass merchants. Similarly, there is an increase in online distribution channels who are newly partnering with private brands⁹. This restructuring means PupPal will need to explore the benefits of selling through online distribution channels (i.e. Chewy). Additionally, we learned that consumer interests in pet accessories peak in the summer and winter months. While researching key Google Trends¹⁰, there was a pattern of seasonality in search terms such as “dog toys” and “dog balls”. With this information we have shaped certain pull strategies in our aggregate planning to revolve around these peak times.

PupPal Must Utilize Social Media to Appeal to Our Millennial Segment

As a high tech company, it is imperative that there is significant overlap between our target market and the age range that is most impressionable on social media. PupPal needs to capitalize on its promise of connectivity in an era where it is more important than ever. Ages 18-34 are the most receptive to social media ads, have the highest willingness to pay, are more driven to invest in companies with CSR initiatives, and have the most interest in innovative dog products¹¹. Our IMC schedule reflects marketing strategies that are targeted towards millennials through the use of social media, making an impression by playing to our strengths and values.

One-on-One Interviews Revealed Concept Interest & Valuable Design Suggestions

In the consumer insight interviews, we found that a significant portion of dog owners were very attracted to the idea of checking in on their dog while away from home, especially those who admitted to having an anxious attachment to their dog. Consumers with large-sized dogs indicated concerns with durability and feasibility for disabled dogs (See MK Appendix 4).¹²

⁸ Jack Daly, “Pet Grooming & Boarding in the US,” IBISWorld, January 2021, <https://my-ibisworld-com.ezproxy.bu.edu/us/en/industry/81291/about>.

⁹ Danziger, Pamela N. “Pets Are Going Digital: The Brands Pioneering The \$565 Million Market For Smart Pet Products.” Forbes. Forbes Magazine, February 4, 2019.

¹⁰ Data source: Google Trends <https://trends.google.com/trends/explore?cat=432&geo=US&q=dog%20toys>.

¹¹ Rebecca Cullen, “Pet Supplies: Incl Impact of COVID-19 - US,” Mintel, July 2020, <https://reports-mintel-com.ezproxy.bu.edu/display/987090/>.

¹² Anonymous Interviewee. Interview by Megan Latt. Video Interview. Boston, MA, March 3rd, 2021.

We plan on addressing durability concerns by using high-density polyethylene as the outer casing for our product. Additionally, a consumer with a medium-sized dog suggested implementing pre-set sounds instead of a two-way sound system to prevent scaring dogs, which has now been implemented into our product design.¹³

Industry Experts Provided Insightful Comments on Customer Behavior and Perception

In order to better understand the pet industry, we interviewed managers, employees, and owners of pet retail stores. We specifically interviewed members of Pet Supplies Plus in Queens, NY and Ciao Bow Wow! in North Andover, MA (See MK Appendix 4). We learned about the importance of playing into PupPal's playful and unique features, as well as assuring customers of the durability of the ball. The employee from Pet Supplies Plus recommended that we consider having stores do live demonstrations of our product due to its technological nature.¹⁴

Additionally, the owner of Ciao Bow Wow! mentioned that high return rates would prove to be one of the biggest hurdles.¹⁵ She emphasized that PupPal needs to address user's concerns of the product, assuring quality, durability, and ease-of-use, which we have accounted for in our House of Quality (OM Exhibit 2).

Questionnaire Results Revealed Our Target Market Displayed the Highest Purchase Intent

Our questionnaire results revealed a strong preference for a new product name, positive reception for our CSR initiatives, and brought up concerns about our pricing. For our Qualtrics questionnaire, we received 140 total respondents, where 110 were collected as full responses. We learned that 39.34% of our total respondents preferred the product name "PupPal." Additionally, we gathered more information about the psychographics of our target market and their concerns with leaving their dog at home alone. 27% of owners claimed that their dogs frequently experience separation anxiety. CSR initiatives also proved to positively affect purchase intent, increasing it by 3% (See MK Appendix 4).

The majority of consumers were intimidated by PupPal's high price, with many of the respondents (86) preferring the price to be at the lowest bracket (\$164-227). However, due to financial implications, the need to increase our price to \$300 has decreased purchase intent from

¹³ Anonymous Interviewee. Interview by Megan Latt. Video Interview. Boston, MA, February 3rd, 2021.

¹⁴ Scardini, Jullia. Interview by Megan Latt. Video Interview. Boston, MA, March 3rd, 2021.

¹⁵ Larocca, Melanie. Interview by George Christo. Video Interview. Boston, MA, March 3rd, 2021.

9.5% to 7.3% (See MK Appendix 4). Thankfully, as respondents within our projected target market were those with higher purchase interest, this survey also proved to show that our identity is in line with customers' brand associations.

Creative Elements Feedback Indicated a Strong Preference for High-Tech Orientation

During the polling session in the creative workshop, voters showed strong interest in marketing our product as high-tech, as well as images that represented this element. There were concerns about strengthening brand character to align directly with our company values (MK Appendix 4). This feedback solidified our decision to position PupPal as a high-tech product with entertainment and surveillance capabilities.

Positioning Maps Stem from the Most Important Customer Attributes

Our positioning statement is as follows:

"For **on-the-go dog owners** who *frequently* leave their dogs at home and need a *durable* product and *interactive* way to **engage** with their dogs, the **PupPal** is a high-tech dog toy and surveillance camera, which facilitates **easy check-ins** for busy professionals as well as at-home **entertainment** for families and dogs alike and is *unlike* the Wickedbone and FURBO."

Our first positioning map focuses on levels of engagement and accessibility (MK Appendix 2). Similarly, our positioning statement reflects how the use of our companion app enables users to have a more engaged experience with their dog. We chose these two attributes because it reflects our unique selling proposition of actively being able to play with your dog from anywhere.

Our second positioning map emphasizes the variety of play styles and degrees of control available in the pet accessories market (MK Appendix 3). The second statement focuses on being able to control the PupPal while actively playing with your dog from anywhere. The second set of attributes focuses on actively communicating the playful and reliable aspect of the PupPal brand character. Overall, PupPal differentiates itself from its competitors through its implementation of an easily accessible surveillance system in a playful and engaging manner.

Awareness

PupPal's IMC Plan Utilizes Outlets that Best Communicate the Product's Functionality

PupPal's Integrated Marketing Communications Schedule includes magazine advertisements, fairs & events, online & social media, PR & blogs, our website, creative events, and trade shows. These vehicles are separated into our push and pull strategies. Our marketing strategy will focus mainly on emphasizing our high-tech and playful brand character through digital platforms. As seen below, our awareness increases from 7.6% in year 1 to 21.2% in year 5 with a large increase in year 3 due to magazine advertisements and segment size growth (MK Exhibit 2).

MK Exhibit 2: IMC Awareness Years 1-5 Summary

IMC Schedule Awareness						
		Year 1	Year 2	Year 3	Year 4	Year 5
Paid	Magazine Ads			2.63%	2.63%	3.01%
	Fairs/Events	2.58%	2.58%	4.30%	4.30%	4.30%
	Online	2.00%	3.00%	6.00%	7.00%	8.00%
	Creative Marketing Idea			1.00%	1.00%	1.00%
Earned	PR Magazines & Blogs	2.00%	2.00%	2.00%	2.00%	2.00%
	Word of Mouth		0.19%	0.22%	0.70%	0.89%
	Carry Over		0.50%	2.00%	2.00%	2.00%
Owned	Social Media	1.00%	1.00%	3.00%	3.00%	3.00%
Total Awareness Generated		7.58%	9.27%	18.52%	20.00%	21.19%
Total IMC Schedule Cost		\$172,760	\$169,762	\$330,746	\$333,687	\$348,794
IMC Expenses as a % of Sales		8.00%	5.43%	4.46%	3.77%	3.17%

We did not implement the use of billboards, outdoor/transit advertising, and point of purchase displays. This is mainly due to the technological nature of our product and the high marketing expenses associated with these vehicles. We understand that customers are looking for live demonstrations of the PupPal before purchasing our product. To capture customer interest, we believe it would be more beneficial to allocate more resources towards communicating to the customer about how our product functions through online marketing tactics.

At PupPal, We Utilize a Tone & Message Correlating to our Marketing Goals

The goal of PupPal's marketing campaign is to communicate our unique selling proposition with an emphasis on the connectivity and entertainment benefits of our product. We also want to express our company values of innovation, playfulness, and self-expression.

Our marketing collateral will encompass our playful yet reassuring brand image and generate awareness to our target audience.

PupPal's Logo & Slogan Embrace a Sleek, Tech-Oriented, yet Playful Design

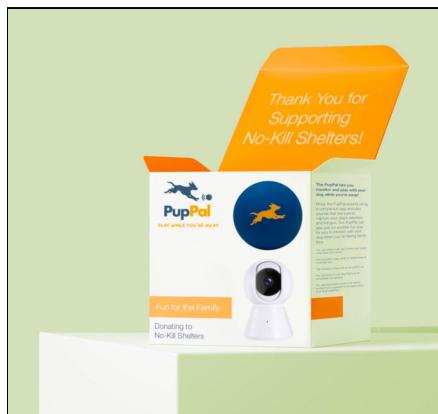


MK Exhibit 3: Logo

Based on external feedback, our team chose a logo with a simplistic, sleek design (MK Exhibit 3). This logo represents the expensive technical components and long-lasting, reliable quality of our product. It also accurately represents the ideal medium-sized dog that is most suitable to engage with our product. Our logo also incorporates our slogan, "Play while you're away!" We believe that this phrase informs customers of their ability to interact with their dog from anywhere. Our catchy and easy-to-remember slogan allows us to establish brand recognition and better communicate our value proposition to customers.

PupPal's Packaging Aims for a Billboard-Like Effect & Communicates CSR Initiatives

MK Exhibit 4: Packaging



PupPal's packaging will be informative, focusing on communicating our value proposition (MK Exhibit 4). To fall in line with our CSR initiatives, the packaging design will be composed of recyclable matte cardboard. On the back of the box, we will show an in-action photo of our product being used. Considering the high premium on our product, we want customers to fully understand the benefits when positioning us against our competitors. Additionally, our

packaging will include information on CSR initiatives and company values. This will allow us an opportunity to communicate to consumers about our Best Friends CSR initiative. Our product box will also include a reminder to recycle our packaging after opening the PupPal, in alignment with our CSR initiatives.

Push Strategies

Magazine Advertisements Will Begin in Year Three

MK Exhibit 5: Sample CSR Full-Page Magazine Ad



PupPal's total magazine awareness grows from 2.6% in years 3 and 4 to 3% in year 5 (MK Appendix 5-7). We chose pet toy and entertainment magazines such as *Healthy Pet*, *Best Friends*, *All Animals*, and *Family Dog*, to advertise our product in an effort to better reach our target markets. We hypothesize that these awareness percentages are lower in comparison to other IMC vehicles because of low circulation numbers and the decline of the print media industry. Out of the four magazines we chose, *Healthy Pet* successfully captures our target market the most with the highest circulation and awareness (MK Exhibit 6). This is most likely due to the versatility of the magazine's focus on "relevant and educational pet wellness content to pet owners."¹⁶ Therefore, we decided to run a full-page advertisement in *Healthy Pet* from year 3 onwards.

MK Exhibit 6: Magazine Circulation and Awareness Generated in Year 3

Magazine	Circulation	% in Target	CPM Full Page	Total Awareness
Healthy Pet	2,100,000	52%	\$53	2.11%
Best Friends	250,000	71%	\$46	0.22%
All Animals	510,000	52%	\$63	0.44%
AKC Family Dog	270,500	71%	\$67	0.24%

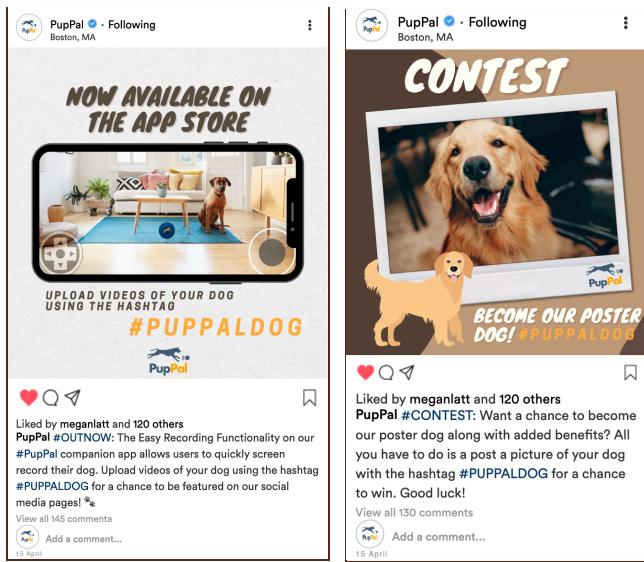
Fairs and Events Will Key in on the Opportunity for Live Demonstrations

To successfully promote and give live demonstrations of the PupPal, fairs and events will take place in years 1 through 5 in eight different locations across the country. The fairs we chose are the Pet Fair, Toy Fair, Kentucky State Fair, the Chester Dog Fair, Ventura Street Fair, Bark in the Park, Comic Con, and the Seattle Mart Fall Show. We strategically chose fairs that had a variety of different specialties and were located all across the United States. Specifically, we

¹⁶ "Healthy Pet Magazine," Facebook, accessed April 25, 2021, <https://www.facebook.com/HealthyPetMagazine>.

wanted to attend some fairs that did not specialize in dog products, such as Comic Con and the Ventura Street fair, to appeal more to higher-income millennials and families while positioning ourselves as a tech product. Considering that our awareness for fairs is 2.6% in year 1 and is expected to grow at a rate of 0.67% each year, we believe that the fairs we have chosen will have a successful growing impact on our target market (MK Exhibit 2).

MK Exhibit 7: Instagram Mock-Up Posts



Online Marketing Vehicles

Social Media

From our social media listening and research on our target market, we recognize the importance of utilizing social media as one of our IMC vehicles. It is crucial to implement strategies that actively engage the consumer to meet our projected social media awareness growth of 3% (MK Exhibit 2). Roughly 65% of pet owners post about their pets on social media an average of two times per week¹⁷.

From this information and research, our team decided to implement a marketing tactic that allows PupPal to interact directly with the consumer through our application.

As seen in MK Exhibit 8, our Instagram feed is a representation of our playful, high-tech and casual brand character. Our goal is to use social media platforms to communicate and listen to the customer's wants and needs. One strategic tactic that we plan on implementing in year 1 is a contest to become PupPal's Poster Dog, where they win a free PupPal if selected (MK Exhibit 7). This will incentivize customers to participate in the contest and spread awareness through Word of Mouth. Additionally, we intend on promoting the "Easy Recording Functionality" of the PupPal companion application by encouraging our customers to post videos of their dog interacting with the product (MK Exhibit 7). Overall, we believe that these social media strategies will allow us to better understand the needs of our target market.

¹⁷ Kristina Lotz, "New Survey Shows How Much We Love Posting Our Pets On Social Media," iHeartDogs.com, May 8, 2016, <https://iheartdogs.com/new-survey-shows-how-much-we-love-posting-our-pets-on-social-media/>.

MK Exhibit 8: Instagram Feed

Our total online marketing expenses consists of paid search, social media, website, influencers, creative expenses, and tech blogs. The calculations and percentages are listed in the appendix of our business plan. Our year 1 online marketing budget focuses on generating awareness primarily through influencers, blogs, search engines, and social media (MK Appendix 10-11). Our year 3 budget reflects an emphasis on an increase in search engine costs. This cost increase (\$25,000) is a reflection of our growing awareness and increase in advertising expenditures in other marketing vehicles.



PupPal's Public Relations Outlets Include Magazines and Blogs

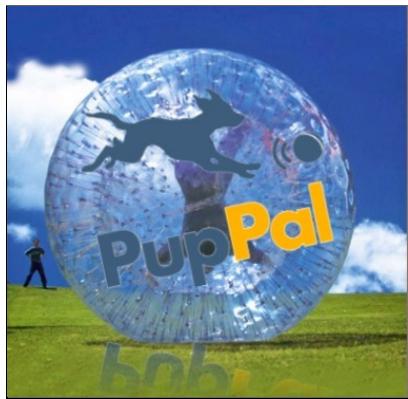
With the increase of interest in smart technology products by pet owners, we can capitalize on this interest by targeting high-end pet-tech blogs and influencers. We have selected 4 of the most relevant pet technology blogs to promote our product on: *TechnoBark*, *DogTipper*, *iHeartdogs*, *Dog Milk*. Four social media influencers that we believe will be influential in helping generate product awareness in the pet accessories market are: Tucker Budzyn, Doug the Pug, Harlow and Sage, and Loki the Wolfdog. Each of these blogs and influencers will be given press kits of our product, and their impressions of our product will be redirected to their followers. These same influencers would be introduced to our product before we begin to put in advertisements in magazines.

PupPal's Website Provides a Brief Snapshot of our Brand & Call-to-Action Buttons

Our website will be a communication tool that includes our product descriptions, company values, list of available retailers, and explanation of corporate social responsibility initiatives (MK Appendix 15). It will also picture our logo in the far left corner, our slogan in the center, and a photo of our product in use. On a separate page, we will allow potential consumers to review customer testimonials. At the bottom of our home page, we will link our social media platforms and customer service information.

Guerrilla Marketing Tactics Aim to Draw Awareness in Unconventional Ways

MK Exhibit 9: Zorb Ball Event



PupPal will also focus on creative guerilla marketing efforts to attract potential customers. One idea that we have is to place giant *Zorb* balls in populated dog parks, so dog owners can place themselves inside and be chased by their dogs. By replicating the idea of the PupPal ball onto a larger scale, as well as placing our logo on the ball, we can further our brand awareness and allow consumers to visualize the experience we are selling. Complimenting this idea, we also plan to place smaller balls of varying sizes into the parks, with our logo attached. In the middle of our logo, we will incorporate a QR code that redirects the user to our website. We plan to randomly survey some of these owners in order to capture potential consumer interest.

Pull Strategies

Trade Shows Aim to Captivate Retailers' Attention by Directly Exhibiting Benefits

It is important to consider trade shows in our pull strategy to generate more exposure to retailers, chains, and mass merchants in the pet accessories industry. The trade shows we will be attending in years 1 and 2 are the Global Pet Expo, Super Zoo, St. Louis Pet Fest, Atlanta Pet Fair & Conference, and the Philadelphia Gift Show. The number of trade shows we attend will decrease over the years as we generate more awareness. We believe that a sleek, minimalist design with complementary colors will be able to properly attract retailers' attention and communicate our value proposition effectively (MK Appendix 14). For our trade magazine advertisements, we will use a similar advertisement (MK Exhibit 5).

PupPal Conducts Yearly Social Media Listening to Measure IMC Effectiveness

We will be measuring the effectiveness of our push and pull strategies in our Integrated Marketing Communications Schedule through a yearly social media listening and BASES Forecast analysis. This social media listening will include crowdsourcing and analysis of

customer reviews to see how our product fares in the market. Additionally, we will compare our IMC Schedule directly to our BASES Forecast to evaluate if we should increase or decrease marketing expenditures at the end of each year. If we exceed our forecasted demand in one year, we will not change our projected marketing expenses. Otherwise, we will consider cutting down costs. By implementing measurable goals for our marketing campaigns, we will be able to truly measure the benefits of PupPal for our consumers.

Brand Extension Possibilities will Promote Future Growth

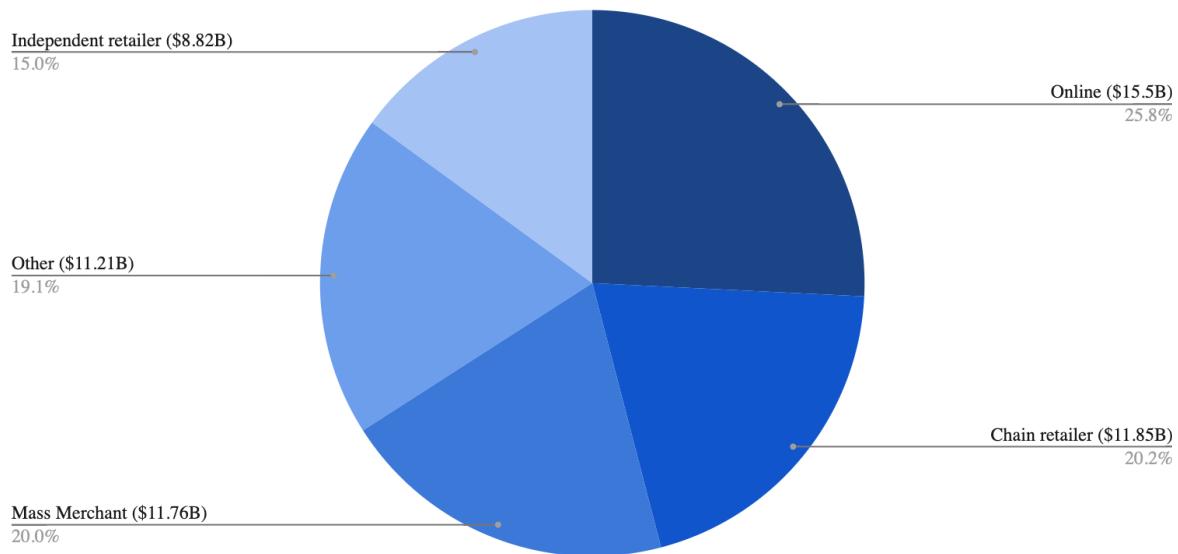
For years 4 and 5, we have considered growing our business through brand extensions (MK Appendix 12). These ideas would have to capture PupPal's brand DNA, accentuating high-tech yet simplistic products with a focus on connectivity. Our first approach will leverage this brand image of closeness and care from far away with our PupPal DoggyDaycare concept. Existing PupPal customers will utilize our application to check their dog into one of our local daycare facilities and monitor their behavior on their private playcam for \$40 per day.

Another approach, the PupCall concept, expands upon our brand image of being innovative, casual, and fun. Here, owners and dogs will share a matching bracelet and retractable collar, with bluetooth features that make the dog-walking experience more entertaining. These concepts will be explored further in later years to understand their economic feasibility.

Distribution and Pricing

Distribution Channels

MK Exhibit 10: Retail Environment of the Pet Accessories Industry



The pet accessories industry is worth \$58.8 billion with four primary distribution channels: online, mass merchants, chains, and independent retailers. The industry forecasts an 8% sales growth in among e-commerce industries from 2020 to 2025¹⁸. This growth prediction is based on the idea that the increase in tighter pet-owner relationships in the U.S. could help drive sales of premium pet products.¹⁹ Therefore, our distribution channel will account for industry forecasts and reflections of psychographics in our target market. The “other” category includes veterinary offices, drug stores, and grocery stores where expect to make little to no sales, which is why we have excluded this category from our distribution.

PupPal’s Channel Structure Is Constructed Based on Our Industry’s Retail Environment

In the first two years of production, we will rely solely on our selected list of independent retailers and Amazon, which will function as our online outlet, for distribution. Starting in year 3, we will enter chains as well, including PetCo and Chewy, a subsidiary of PetSmart. In years 4 and 5, we will utilize Target as our selected mass merchandiser. We arrived at a desired retail

¹⁸ “EXECUTIVE SUMMARY PET SUPPLIES: INCL IMPACT OF COVID-19,” Mintel (Mintel Group Ltd, July 2020), <https://reports-mintel-com.ezproxy.bu.edu/display/987090/>

¹⁹ “EXECUTIVE SUMMARY PET SUPPLIES: INCL IMPACT OF COVID-19,” Mintel (Mintel Group Ltd, July 2020), <https://reports-mintel-com.ezproxy.bu.edu/display/987090/>

price of \$300, which varies depending on the type of retailer according to the channel structure of our competitors. For example, our retail price at an independent retailer will be 120% of our current price of \$300 (MK Exhibit 11).

MK Exhibit 11: Competitor Pricing Analysis Reveals Large Differences in Retail Prices

Competitor Price Analysis	
PupPal Retail Price	\$300
Independent	1.2
Amazon	0.928
Chain	0.928
Mass Merchant	0.717

PupPal's Pricing, Margins, and Volumes Vary Based on Type of Channel Intermediary

We will be utilizing Amazon to fulfill 86% and 70% of total units sold in years 1 and 2 (MK Appendix 13). Due to the technological nature of our product, we understand most consumers will be viewing our product for a tutorial and wish to purchase online thereafter. As Amazon's ability to be our largest revenue-generating outlet, they will remain our top distributor in all five years with a manufacturing selling price of \$167, margin of 40%, and retail price of \$278.

Our expert interviews revealed that independent distributors would not be the best channel for us to use since consumers utilize them mostly for quick in-and-out trips and low-dollar purchases.²⁰ We will only distribute 14% and 29% of our manufactured units to them in years one and two. We will be selling to independents for \$180, who markup our selling price by 50% for a retail price of \$360.

In year 3, due to increases in both expenditure in our Integrated Marketing Communications plan and therefore awareness, we expect to begin selling to larger chain locations such as PetCo and Chewy. Due to the competitive nature of captivating shelf space in these locations and a higher margin of 45%, we will only be distributing 18% of our units to them with a selling price of \$153 and retail price matching that of Amazon at \$278 (MK Appendix 13).

After gaining more awareness in years 1 to 3, we plan to enter mass merchandisers in year 4. We chose Target due to their more widespread distribution in urban and surrounding

²⁰ Larocca, Melanie. Expert Interview. By Trey Christo. 4 March 2021.

areas near our target market. Our closest competitors tend to sell at mass merchants for around 70% of the ideal retail selling price (MK Exhibit 11). Due to Target's everyday low pricing strategy, they will be selling our product at a lower price of \$215. Though this may cause channel conflict, we recognize the potential for more unit sales from price-sensitive customers in these outlets. To mitigate this risk, we plan to scale back our operation with independent retailers down to 12% of units in year 5.

Year 5 presents us with the biggest opportunity to capitalize on our highest forecasted awareness and ACV percentages to meet demand. Since we will heighten our demand during our peak seasons of summer and the end-of-year, many will view our product as a great gift or a gadget for family fun in the summer. Because we predict consumer interest will peak at these times, we will scale up our distribution to mass merchants accordingly to 30% of year 5's total units. With Target and Amazon's excellent logistics taking the majority of our distribution, we will be better positioned to handle product problems should they occur.

Our Purchase Intent Data Assisted Our Pricing Strategy

MK Exhibit 12: Separating Purchase Intent by Age Fell In-Line with Targeting Strategy

Age	Probably Buy		Definitely Buy		Total	
20 - 30	17	25%	-	0%	17	25%
31 - 40	-	0%	3	43%	3	43%
41 - 50	-	0%	-	0%	0	0%
51 - 60	4	16%	-	0%	4	16%
61 - 70	-	0%	-	0%	0	0%

Millennials make up the majority of our probably and definitely buys (MK Exhibit 12). 25% of respondents aged 20-30 indicated they would probably purchase while 43% of respondents aged 31-40 indicated they would definitely buy. However, only 16% of respondents in Gen-X, our secondary segment, indicated that they would probably purchase. Considering the limitation that a majority of our surveys were conducted at convenience as opposed to on a probability basis, it is likely we could not get a hold of enough Gen-X consumers despite our best efforts. Since they are the primary age of homeowners with children and high purchasing power, they are strongly considered as our secondary target market.

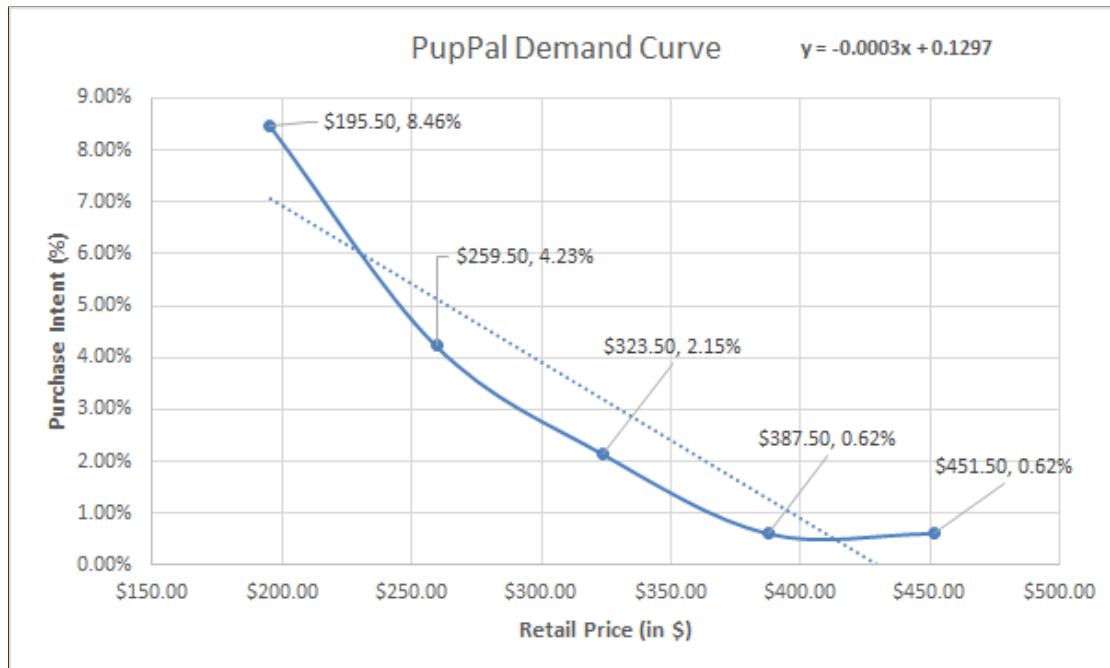
MK Exhibit 13: Segmenting Purchase Intent by Price Brackets

Willingness to Invest More (\$)	Probably Buy		Definitely Buy		Total	
164 - 227	13	14%	2	2%	15	16%
228 - 291	9	41%	-	0%	9	41%
292 - 355	4	36%	1	9%	5	45%
356 - 419	-	0%	-	0%	0	0%
420 - 483	-	0%	1	100%	1	100%

Breaking down the data based on willingness to invest, we observed that anyone who indicated a “probably” or “definitely” buy is willing to invest more in products for their dog. At any price bracket listed, our product is considered a premium to consumers. Because a majority of our “probably” and “definitely” buy respondents were in the lower 50% of the spectrum (MK Exhibit 13), we considered a retail price within these brackets. Similarly, our research on millennials has shown an increase in purchasing power over time²¹. From this analysis, we can conclude first-time dog owning millennials continue to remain a good target.

With these numbers in mind, we constructed a demand curve for our combined segments:

MK Exhibit 14: Demand Curve Follows Conventional Downward-Sloping Trend



²¹ “How a 'Youth Boom' Could Shake Up Spending Trends,” Morgan Stanley, accessed April 25, 2021, <https://www.morganstanley.com/ideas/gen-z-millennials-set-for-consumer-spending-increases>.

This demand curve follows a conventional downward-sloping trend. Due to the current pandemic situation, the limited survey sample may result in data deviation, which in turn underestimates people's willingness to pay. Our demand curve indicated a revenue-maximizing price of \$216. Due to our unique list of expenses and low cumulative purchase intent numbers, we decided to increase our retail price. Given our high cost of goods sold, we concluded it would make more sense to accept less demand with higher profit margins in order to recoup those costs. Therefore, we have set our current desired retail price at \$300, as that fell within the ideal range to both recover costs and maintain a healthy enough purchase intent of 7.3% year one and 7.9% year five (MK Appendix 14).

Bases Model Forecast

Over the five-year period we have forecasted, PupPal has potential for a substantial return on investment due to healthy growth rates. For our target market, we applied a 1.5% yearly growth rate in proportion with the increase in dog ownership per year across the country²². The jump in year 3 awareness is due to heavily increased ad expenditure which generates more demand (MK Exhibit 2). PupPal is reliant on expensive technology, which means our retail price will be high in order to ensure longest-lasting product quality. Our hefty price tag and product durability will make repeat purchases rare. Since our retention rates would be low, we will compensate for this loss by spending more on marketing accordingly.

One issue we face as a new product is units lost to competition. Though we introduce an innovative concept to market, we understand that competitors can quickly follow up with similar offerings. Currently, we expect 35% of units to be lost in year 5 with healthy growth rates with a forecasted product life cycle of 7 years (MK Appendix 14). Our net income is also a strong example of our profitability, as it yields positive numbers for all five years. PupPal will be a profitable investment by implementation of risk mitigation strategies and a thorough understanding of our retail environment.

²² Jon Cooper, "Pet Ownership Statistics [2021]: U.S Pet Population," Spots.com, February 2, 2021, <https://spots.com/pet-ownership-statistics/>.

Conclusion

By properly segmenting our target market PupPal is able to implement a marketing campaign that drives brand awareness and purchase intent. Our intensive industry and consumer research reaffirmed our decision to position ourselves as a high-tech dog toy for this target market.

For our distribution strategy, we will be implementing conventional penetration tactics by attempting to enter independent stores and Amazon in years 1 and 2. In year 3, we plan to enter two pet chains, PetCo and Chewy, as our awareness significantly increases. In year 4, we will enter Target, which will allow us to better market ourselves towards price-sensitive consumers.

Similarly, our revenue maximizing price of \$216 indicates that we will increase our price in later years, increasing our purchase intent. Overall, we are confident that our growing segment size and purchase intents will allow us to generate awareness about PupPal in our target market.

Operations



Operations

Product Design

PupPal's Product Design Implements Important Customer Attributes

The PupPal is designed to give buyers maximum value for their dollars spent in the form of an all-inclusive, bundled product, including a playcam, gyroscopic ball, and inductive charging dock. When researching important customer attributes relative to a product of PupPal's caliber, we applied the four most important factors into the basis of our design: durability, ease of app navigation, ease of ball use, and safety.

PupPal Customers Want a Product Safe and Durable for Their Dogs

Customers willing to purchase our product will care about durability. They expect the product to be long-lasting and safe because of its premium price and brand image we are portraying.. Our customers simply will not buy our product if we cannot guarantee their dog's well-being when using our product. We conducted extensive research on possible materials for the ball encasing to deliver on our price and brand image.

After consulting with Boston University graduate engineering students, we concluded that high-density polyethylene (HDPE) would yield the best durability. This material used in the Jolly Ball²³, a toy commonly purchased for dogs and zoo animals. HDPE is not only stiff, long-lasting, and easy to clean, but also drop-resistant. Our House of Quality (OM Exhibit 2) displays that important engineering implications to consider for durability and safety are the motor weight, material density, and battery usage.

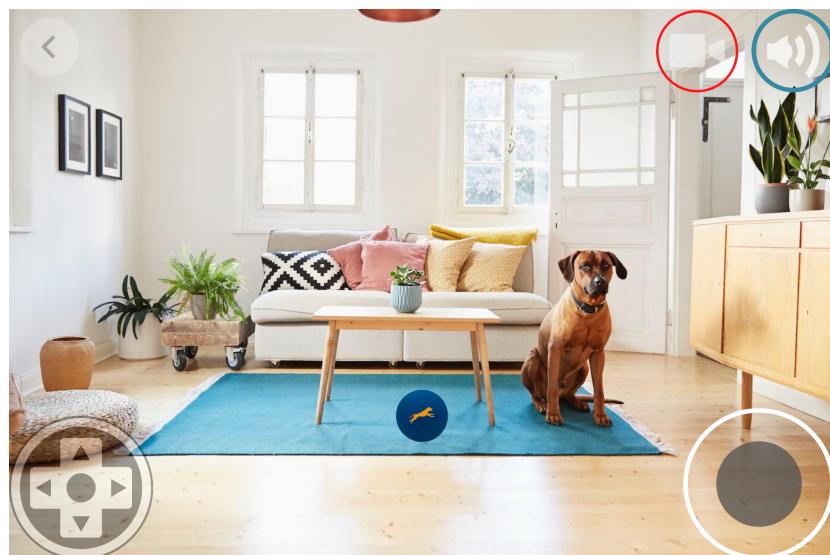
Our product must be light enough to be picked up by an average dog. We determined the ideal ball weight to be 0.75 lb. This particular weight will help to ensure the inner mechanism stays intact when undergoing stress. We intend to house the gyroscopic mechanism in a polyethylene housing with a thickness of 0.25 inches, thick enough to withstand the pressures of an average dog bite. Other concerns include the battery overheating, which is why we will incorporate heat sinks within the inner mechanism. For quality control, our plant manager and mechanical engineer will conduct functionality and durability testing in our first two years of production. After two years, we will hire quality assurance manager to handle these duties.

²³ "Jolly Soccer Ball," Jolly Pets, accessed April 25, 2021, <https://jollypets.com/products/jolly-soccer-ball>.

PupPal Customers Want to Readily Use our Product With Ease

We want consumers to feel confident when using our product regardless of their comfort with technology. As shown on our House of Quality (OM Exhibit 2), to maximize the appeal of our product to customers, we must ensure proper device compatibility for both iOS and Android platforms and an intuitive user interface. We envision our app design to have a sleek, simplistic look with few touchpoints (OM Exhibit 1). The playcam will function as the app's domain with five buttons; the lower left being a camera panning control, the lower right being the ball joystick, the upper right buttons enabling screen recording and emitting pre-set sounds, and an exit button in the top left. The exit button will navigate the user to the home screen, hosting connectivity status, social media links to upload their screen captures, and a settings icon.

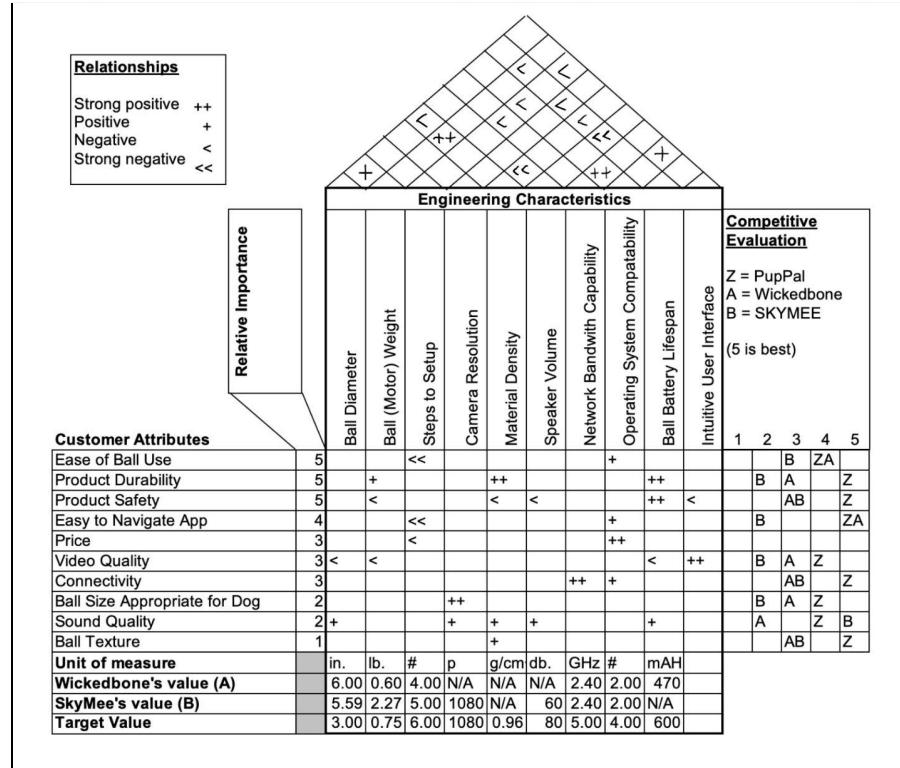
OM Exhibit 1: Simplistic App Design Allows for Ease of User Control



Additionally, it is equally important that we minimize the steps needed to calibrate the product. Inside the packaging, PupPal customers will receive a unique access code to connect the product to the app. Once entered, the app will instruct the user on the playcam setup, first facilitating a connection to the home WiFi router. Subsequently, it will walk the user through initiating a bluetooth connection pairing between the playcam and ball, which can be turned on by tapping a button on the back of both. Also included in the packaging will be a straightforward instruction packet with clearly defined steps for setup, including where to place the playcam relative to room spacing and distance from the WiFi router.

While our product is technologically complex, we ultimately want to instill confidence in consumers that anyone can use our product, which we account for in our product design and rhetoric within the instructions.

OM Exhibit 2: House of Quality Reveals Customers Value Safety, Durability, and Ease of Use



Quality Assurance

Quality Assurance Tactics Attempt to Maximize Customer Satisfaction

Customers will define quality in our product by assessing its relative reliability, durability, and serviceability. For the price point they are paying, they will need assurance regarding the durability of our product (e.g. the product will be able to withstand heavy impacts and is safe for dogs). Customers will also want our product to be serviceable (easy to use). We understand that consumers are looking for convenience; thus, it is in our hands to provide an accessible and seamless experience. These dimensions fall in line with PupPal's values of providing a minimalistic and fun design. We've prioritized certain engineering characteristics such as minimal steps to setup, dense material, and an intuitive user interface on our mobile app.

To ensure consistency in production and high yields, we will utilize preventive techniques to combat internal failure in an attempt to minimize external failures. Inspections will

be put in place so as to minimize the scrap rates, as shown in the exhibit below (OM Exhibit 3), with a quality assurance manager being introduced in year three to account for our rise in awareness and demand.

OM Exhibit 3: Quality Control Measures Aim to Maximize Yield

Year	0	1	2	3	4	5
Yield	82%	87%	93%	96%	97%	98%
Yield Growth Rate	0%	5%	6%	3%	1%	1%

In addition, we have implemented measures in our facility to rework and retest defective products discovered at the testing site and or to repair recycled products sent back by customers through the CSR program. Our assembly workers will be able to break down the polyethylene material and identify issues within the inner unit. Depending on the state of the product part and its degree of centrality to the function, our workers will either be able to rework it (e.g. scratched polyethylene surface) or need to scrap it (e.g. for a non-functioning accelerometer). As part of our effort to champion good products, the quality control department (i.e. plant manager, mechanical engineer, and quality assurance manager) will ensure proper education and training to give assembly workers the knowledge to handle these issues at their discretion.

Bill of Materials

PupPal's Bill of Materials Comprises Three Separate Parts

Our Bill of Materials (OM Appendix 1) is rather complex and contains three separate categories in accordance with the product's contents: the ball's mechanism assembly, the camera assembly, as well as the inductive charging dock. The main unit, the PupPal ball, will consist of an outer casing of high-density polyethylene, which will house a gyroscopic mechanism hermetically sealed within. This mechanism costs the most (\$19.30), as gyroscopes require complex components in order to operate effectively. The copper heat sinks will be used to regulate the heat generated within. Multiple materials such as the stability ball bearings, axles, and more will require multiple units per product, and total cost has been adjusted as so. Other important features of PupPal also lie within, such as the speaker and bluetooth receiver.

Secondly, the playcam will act as both a camera and a hub to connect both the ball and the user's phone to the PupPal network. The playcam unit will include all the components within a camera (as accounted for in the BOM) along with WiFi and Bluetooth receivers. Lastly, the

inductive charging dock (\$7.8) made of only three parts--the plastic housing, the power cable, and an inductor.

Pricing & Target Costing

To derive an initial idea of how to price our product, we conducted extensive market research through one-on-one interviews (MK Appendix 4), conjoint analysis (QM Exhibit 2), and a marketing questionnaire (Qualtrics Consumer Survey). Through our one-on-one interviews, our interviewees stated that they were willing to spend up to \$150 on a toy for their dog; however, the dog products to their knowledge were either non-electronic toys, or automatic dog feeders.

OM Exhibit 4: Initial Target Costing Calculations

Initial Target Costing			
	\$ per unit	% of	
Retail Price	\$ 320.00	100.00%	of Retail Price
Channel Margin	\$ 144.00	45.00%	of Retail Price
Net Revenue to team	\$ 176.00	55.00%	of Retail Price
G&A	\$ 35.20	20.00%	of Net Revenue
Sales & Marketing	\$ 35.20	20.00%	of Net Revenue
Pre-Tax Profit	\$ 13.40	7.60%	of Net Revenue
Target COGS	\$ 92.20	52.40%	of Net Revenue
Direct Materials	\$ 55.32	60.00%	of COGS
Direct Labor	\$ 18.44	20.00%	of COGS
Manufacturing Overhead	\$ 18.44	20.00%	of COGS

Based on our initial target costing (OM Exhibit 4), we distributed our marketing questionnaire with a different set of price ranges, with prices starting from \$164 to \$483 (our initial target retail price of \$320 laid in the mid range) (Qualtrics Consumer Survey). Most respondents preferred the cheapest price range of \$164-\$227. As such, we lowered our price as best as we could (average of \$300) so as to generate healthy pre-tax profits as seen below (OM Exhibit 5).

OM Exhibit 5: Final Costing (Year 5) Calculations

Final Costing (Year 5)			
	\$ per unit	% of	
Retail Price	269.20	100%	of Retail Price
Channel Margin	115.06	43%	of Retail Price
Net Revenue to team	154.14	57%	of Retail Price
Pre-Tax Profit	19.52	13%	of Net Revenue
G&A	12.75	8%	of Net Revenue
Sales & Marketing	14.29	9%	of Net Revenue
COGS	53.79	35%	of Net Revenue
Direct Materials	38.96	72%	of COGS
Direct Labor	8.45	16%	of COGS
Manufacturing Overhead	6.39	12%	of COGS

We believe that a product of PupPal's nature is a relatively new innovation and addition to the dog toy market thereby justifying a higher average price point of \$300. We understand that our price point may deter customers from purchasing our product which we accounted for by lowering our overall purchase intent (MK Appendix 14).

Supply Chain Structure

PupPal's raw material suppliers come from both China and within the continental United States. We were able to contact and obtain quotes from two different suppliers: one for the Playcam, and one for the polyethylene material. For the remainder of our materials, we attained quotes and distributor locations through online research. We decided to purchase components commonly found in mobile devices (e.g. copper heat sinks, li-ion battery, speaker) from China as their existing infrastructure and domination over tech-based manufacturing would yield better quality and supplier reliability. We provide a brief outline of our supply chain (OM Appendix 2).

We chose to outsource the Playcam from a California-based company with Taiwanese production, AEI Components, who manufactures multipurpose CCTV cameras with illuminators and aviation connectors. Due to the specialization required to produce reliable cameras with both WiFi and bluetooth functionality, we felt as a startup that we do not have the proper infrastructure to produce what is arguably a completely separate product. Once factoring in shipping costs, pricing comparisons led us to choose AEI Components as they provided us a relatively cheaper quote (\$19.93 per unit) compared to other suppliers for a product of our specifications.

AEI provided us with a bulk discount rate of 3% per unit for every 10,000 units ordered (OM Exhibit 6). We applied the same discount rate across our bill of materials (OM Appendix 1). Decreased direct material costs over time, coupled with a large increase in demand starting year three will result in healthier gross margins to cover the necessary increases in staffing expenditures. For our goods made in China, we assumed a transit time across the Pacific by boat to be 26 days with an additional rail freight time of 4 days from Los Angeles, CA to the Kansas City, MO rail terminal for a total of 30 days.

OM Exhibit 6: PupPal Receives Bulk Discount of 3% per 10,000 Items Ordered from Suppliers

Year	Order Quantity	/10k	Cost Reduction % (3% for every 10k)	Order Cost
0	1,574	0	0%	\$47.51
1	10,440	1	3%	\$46.08
2	18,302	1	3%	\$46.08
3	42,394	4	12%	\$41.81
4	54,475	5	15%	\$40.38
5	69,619	6	18%	\$38.96

Additionally, we spoke with New Process Fibre Company, Inc., a manufacturer of high-density polyethylene (HDPE) located in Greenwood, DE. We chose them due to their responsiveness, ISO certification,²⁴ and flexibility with the minimum order quantity of 100 lbs which we will always exceed. The New Process Fibre Company also sells HDPE in sheet-form, which is ideal for our manufacturing facility. We will be utilizing a plastics injection molding machine that will mold the material into the outer casing mechanism for the gyroscopic ball. For our chosen location in Kansas City, MO, we estimated an average freight time by rail from New Process Fibre Company's location (and all other presumed U.S. suppliers) to be 4 days.

In total, we have ten parts coming from the United States while the remaining eight are being sourced from China. When planning for inventory management strategies, we will account for the implications of sourcing parts with much longer lead times from across the Pacific. While we assumed a weighted average lead time of 16 days (OM Exhibit 7) for our inventory planning, we will need to strategically time our material orders so that freight-in from China quantities are relatively equal to those from within the United States, which we will further address within the inventory planning schedule.

²⁴ “Quality Assurance,” New Process Fibre Company, Inc., April 30, 2020, <https://www.newprocess.com/quality-assurance/>.

OM Exhibit 7: Weighted Average Lead Time for Supplier Orders

	USA	China	Total
Total Units	10	8	18%
Lead Times (Days)	4	30	
Weight	56%	44%	
Weighted Average	2.22	13.33	15.56

Facility Location

Our Facility is Centered in an Ideal Location Given our Supply Chain Structure

Our center of gravity and factor rating analysis guided our manufacturing facility location. Based on our supply chain structure (OM Appendix 2) of selected retailers, suppliers, order quantities, and units sold, we arrived at an ideal location in Jasper County, MO (OM Appendix 3). The exact coordinates geographically fell in between Kansas City, MO and Tulsa, OK. However, we chose Kansas City over Tulsa due to it being a larger metropolitan area with more infrastructure, and as a result, likely to have more timely arrival of shipments.

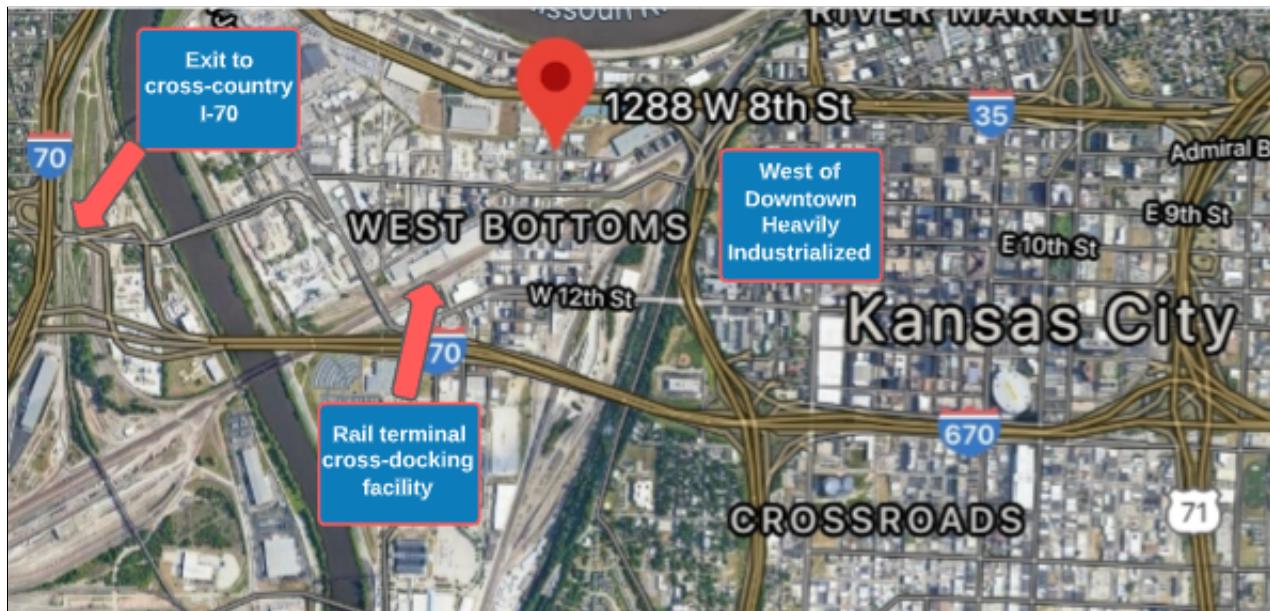
When conducting our factor rating analysis (OM Appendix 4), we identified different factor rating methods on a scale of importance for choosing our location, including labor costs (53%), proximity to suppliers (20%), rent (47%), and distribution costs (7%). The weights of the factor rating methods were derived from our sensitivity analysis and are based on how elastic each parameter is. After calculating a weighted average score for the different cities we were considering, Columbus, IN (100% factor rating), Rocky Mount, NC (99% factor rating), and Kansas City, MO (99% factor rating) were perceived to be ideal locations for our manufacturing facility. As such, we picked Kansas City, MO as it is the closest major city to the location coordinates derived from our center of gravity analysis, and is one of the top 3 locations derived from our factor rating analysis.

In Kansas City, MO, we chose a facility in the West Bottoms neighborhood, which is known for being heavily industrialized. We chose this particular facility as it fell within our spacing requirements at 10,000 sqft and had a reasonable rent rate of \$3.72 / sqft per year²⁵, which gives us more room to spend on building improvement and conversion costs. It is

²⁵ Commercial Real Estate, accessed April 25, 2021,
<https://www.loopnet.com/Listing/1225-W-8th-St-Kansas-City-MO/21632207/>.

conveniently located for freight purposes via rail and truck, with a cross-docking terminal point for both mediums of transit just three minutes away (OM Exhibit 8). Also located near our facility is the I-70, which can be a heavily utilized route for transit both eastward and westward.

OM Exhibit 8: Manufacturing Facility Located at Convenient Position for Rail & Trucking



Facility Layout

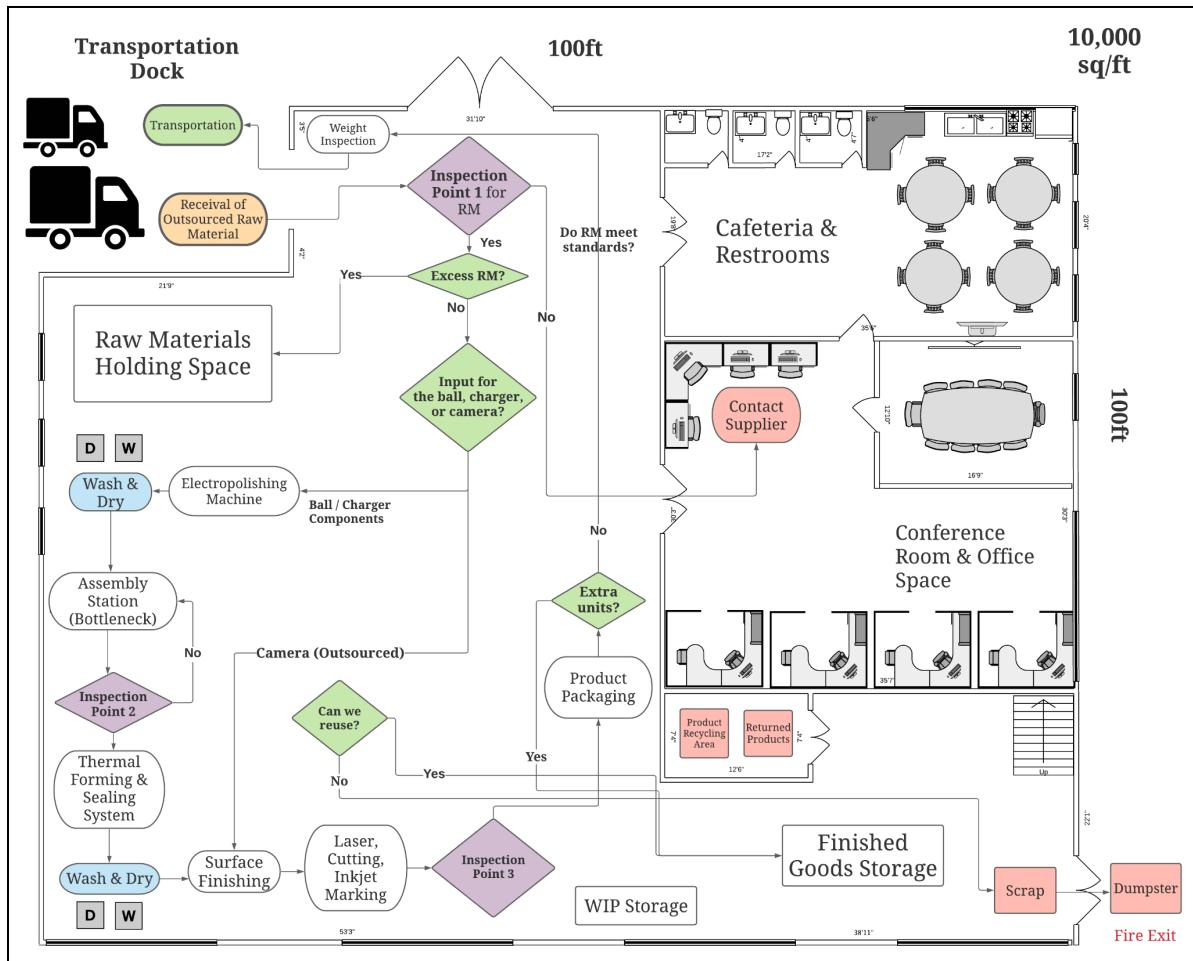
Our Facility Layout Maximizes Efficiency Given Employees and Process Flow

Our facility will be 10,000 sqft in total, which will house all necessary manufacturing stations to make, transport, and store our product. The docking station will be large enough to comfortably accommodate two trucks, which will unload raw materials into our assembly line and load up finished goods ready for shipment to our retailers. Our production line is primarily U-shaped (OM Exhibit 9). We chose this layout due to its relative flexibility for our assembly workers, some of whom will need to control multiple stations in the first few years of production. This layout will continue to serve us well as we ramp up production in year 3 and subsequently increase the number of workers. A U-shaped format can easily accommodate for more assembly workers, and we will not need to invest more capital to change the process layout.

There are three rooms dedicated to storage, one of which will hold excess raw materials, the second holding finished goods, and the third being for recycled product returned via our CSR program. Our workers will work eight-hour shifts with one-hour lunch breaks, so we have included a facility cafeteria to accomodate for their free time. Our four C-suites will have their

own offices, while our customer service department will work in a more open area together. Managers will alternate between their office spaces and giving periodic assistance on the floor. Overall, we are confident that our location and process flow will allow us to effectively manage demand, quality control, and any logistical issues that may arise.

OM Exhibit 9: Facility Layout



Process Flow

Our Process Flow Accounts for Quality Assurance, Capacity, and Inventory

PupPal's process involves four major workstations. The material will go through each station one by one from assembly (metal working), thermal sealing, washing and polishing, all the way to marking and packaging. The task time of each station is also listed in the chart below (OM Exhibit 10).

OM Exhibit 10: Major Work Stations in Process Flow

Major Work Stations	No. of Machines	Weights	Task Time in minutes (Per Batch - 4 PupPals)	Capacity Utilization
Thermal Forming & Sealing System	1	5.56%	32.24	80.60%
Surface Washing, Finishing, Grinding, and Polishing Systems	4	22.22%	14	35.00%
Cutting, Marking, Packaging & Labeling Systems	3	16.67%	29	72.50%
Metal Working Station and Custom Machining Operations	10	55.56%	40	100.00%
		Throughput Time	115.24	
		Total Average Capacity Utilization		79.89%

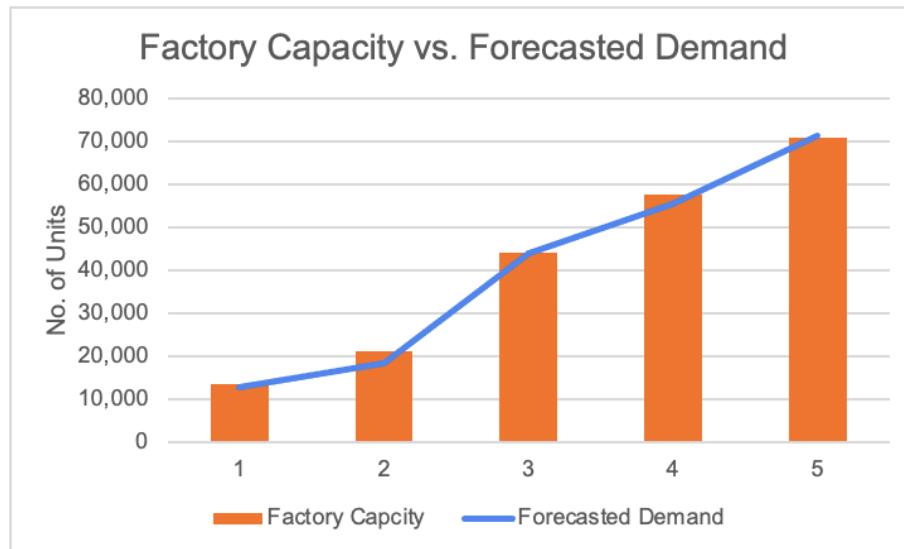
Below is our manufacturing process flow (OM Exhibit 9/OM Appendix 5):

- Our process flow begins at the unloading station of our facility, where our truck and USPS vehicles will transport materials in and out of the facility.
- The arrival of raw materials signifies our first inspection point, which will ensure that our inputs have the necessary parts. In the event that we have more parts than needed to satisfy our aggregate plans, the extra material will be transferred to the raw material storage room.
- Otherwise, materials will be processed through one of two outlets.
 - The outsourced cameras will be transferred straight to the later machines in the process and go straight to packaging.
 - Charging dock and ball raw materials will be transferred to the electropolishing machine, which will smoothen surfaces and remove material residue.
- Afterwards, the units will be washed, dried, and taken off the conveyor to the assembly station, which is the bottleneck of the process at a cycle time of 15 minutes per unit (one unit includes the assembled ball and charging dock).
- After the assembly stage, the work-in-process goods will go through another inspection point before being hermetically sealed. It is more productive to identify any issues with the inner unit before sealing takes place, so as to reduce the amount of HDPE waste.
- If the unit is not up to standard, it will be disassembled for either rework or scrapped.
- Next, the inner ball mechanism will go through the thermal forming and sealing system, where the HDPE material will be molded and hermetically sealed around the components.

- The product will then once again be washed and dried and put through the surface finishing machine.
- The product will then pass through the laser marking, cutting, and inkjet marking machine for paint job and logo installation before a detailed third point of inspection. This will be the most important inspection point, checking for connectivity, motor, and playcam functionality, as it will be the one of the final points before passing through the quality assurance manager to prevent external failures.
- Once the finished materials go through our packaging station, products will be set for either inventory storage or transit. Before going out for shipment, batches of packages will be sent through weight inspection.

To limit our scrap rate and maximize yield, a majority of our process is automated. The only manually operated task is the assembly station for the inner ball mechanism and inductive charger. Due to the inner mechanism's complexity and labor-intensive requirements, this bottleneck station limits output to four units (ball and inductive charger) per hour (taking into account idle time). To fulfill annual demand, we will adjust the numbers of our full-time and part-time workers at the assembly station accordingly based on the limitation of our process capacity.

OM Exhibit 11: Factory Capacity Increases Accordingly with Demand



We plan to invest in the machines ahead of time that have the available capacity to satisfy our foreseeable growth in demand for the next five years (OM Exhibit 11). Due to the high

capacity of the machines and the lower demand of output, it may seem costly in the first two years which will be compensated in following years with the rapid growth in demand and the increasing number of workers and output. The system utilization will therefore steadily increase from 64% in year 1 to 80% in year 5 (OM Exhibit 12).

OM Exhibit 12: Facility System Utilization Progresses Toward Greater Efficiency

Year	0	1	2	3	4	5
No. of Full Time Assembly Workers	1	1	2	5	6	7
No. of Part Time Assembly Workers	1	1	1	1	2	3
No. of Full time Manufacturing Workers	8	8	8	8	8	8
Full Time Assebly Workers' Capacity	640	7,680	15,360	38,400	46,080	53,760
Part Time Assembly Workers' Capacity	480	5760	5760	5760	11520	17280
Total Factory Capacity	1,120	13,440	21,120	44,160	57,600	71,040
Average System Capacity Utilization	59.79%	63.81%	63.81%	74.15%	77.38%	79.89%

Inbound & Outbound Logistics

PupPal is to receive its inbound logistics from both international (China & Taiwan) and domestic channels. Our raw materials storage will have the capacity to hold 108,000 parts equal to less than 6,000 PupPal units. We expect a 30-day lead time for goods coming in from foreign suppliers and a 4-day lead time for goods coming in from domestic suppliers. Therefore, we intend to order our parts on a quarterly basis, ordering foreign parts 2 months before the start of the next quarter and domestic parts 1 month before. On average, we will be ordering 92% of our regular order quantity in Quarter 1 compared to Quarters 2 to 4 (OM Appendix 6) .

Since we were unable to attain inbound freight rates from suppliers, we have accounted for them as 10% of our total direct material costs.

For our outbound logistics and shipments to retailers, we plan to utilize USPS by way of Shippo due to their favorable bulk discount rates in comparison to other postal companies²⁶. Our marketing distribution and pricing strategy (MK Appendix 13) goes hand-in-hand with our total shipping costs to each channel member per year. For example, the frequency of shipments is greater at chains and mass merchants due to more foot traffic and cheaper retail prices at these

²⁶ “The Best Multi-Carrier Shipping Software for E-Commerce - Test,” Shippo, accessed April 25, 2021, <https://goshippo.com/shippo-the-best-multi-carrier-shipping-software-for-e-commerce-test>.

outlets. While the number of annual shipments remains fixed by channel partner type, the number of units in each shipment to distribution centers increases accordingly with our forecasted demand. Therefore, the outbound freight costs increase consistently throughout the five years (OM Exhibit 13).

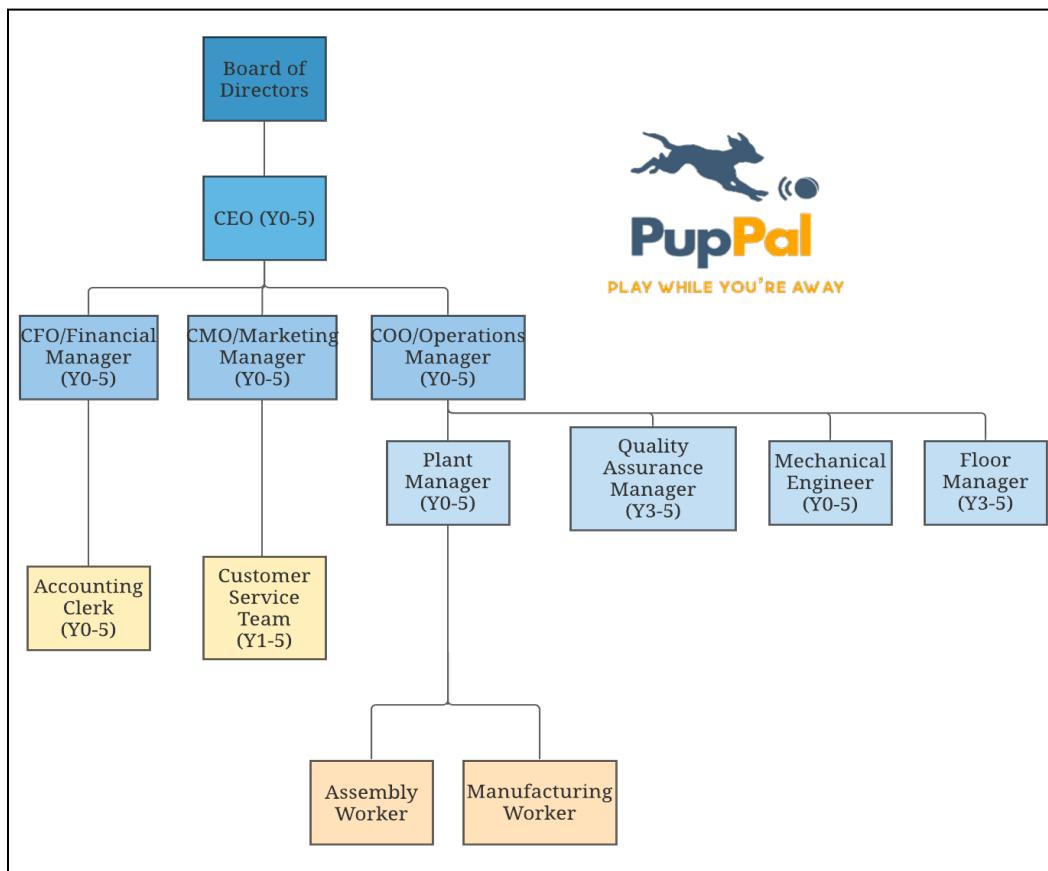
OM Exhibit 13: Outbound Freight Costs by Channel

Year	1	2	3	4	5
Online	\$ 14,316	\$ 16,904	\$ 31,275	\$ 32,071	\$ 33,451
Independent Retailers	\$ 2,501	\$ 7,410	\$ 16,814	\$ 14,342	\$ 11,967
Chain Stores			\$ 11,584	\$ 14,822	\$ 22,673
Mass Merchants				\$ 14,200	\$ 29,623
Total Annual Outbound Freight Costs:	\$ 16,818	\$ 24,314	\$ 59,673	\$ 75,435	\$ 97,713

Because of our midwestern facility location and *most* of our retailers being located on either coast, our average unit shipment cost per channel is relatively equal (OM Appendix 7). Therefore, from a cost perspective, shifting to bigger retailers will not negatively impact our business.

Labor Costs & Organizational Structure

OM Exhibit 14: PupPal Organizational Chart



PupPal will follow a hierarchical organizational structure with a top-down management style. Our managerial departments will be broken up into cross-functional marketing, operations, and financial teams. Establishing a cross-organizational environment will minimize conflict and allow for open discussion in the early years of our company. We decided on this structure because of its clear definitions of authority and responsibility and ability to motivate employees with clear chances of promotion²⁷. We will then be able to incorporate behavioral approaches to job design that motivates employees through job enrichment that reflects our company values of innovation and free expression.

During the startup period , we will have a team dedicated to starting the production of our product, consisting of our CEO, COO, operations and finance team, and assembly and

²⁷ “7 Types of Organizational Structures,” Lucidchart, June 2, 2020, <https://www.lucidchart.com/blog/types-of-organizational-structures>.

manufacturing workers. These additional costs of \$146,000 in our startup period will allow us to properly account for our expected demand in year 1. Working in small teams early on will foster camaraderie between management and employees and allow employees to have a say in job design. Implementing an open-ended job design process is important due to the heavy emphasis placed on assembly and manufacturing workers in our operations process.

Our C-Suite Management team in years 1 and 2 will consist of our CEO and COO, where each C-Suite employee will be in charge of two functional groups. Our CEO, as founder of our company and in charge of all business decisions, will serve as the CFO until year 3. We will have an accounting clerk working under the CFO beginning at the startup period to account for a bulk of our financial expenses. Similarly, our COO will oversee all operations decisions regarding process production and will serve temporarily as CMO. Our customer service team will work under the CMO and consist of 2 workers in years 1 and 2 and grow to 4 workers in years 3 to 5. Our operations department will be the largest within our company with 3 managers, 1 engineer, and approximately 16 full-time assembly and manufacturing workers by the end of year 5. Additionally, as our awareness increases in year 3, we will hire a CMO and a CFO to account for the expansion and demand expected from our company.

To provide competitive compensation for our employees, we will be offering a benefits package which is accounted for in our fixed administrative costs. This package will include health insurance coverage, paid time off, and cash benefits. These cash benefits will be 30% of each employee's yearly compensation (OM Appendix 8). Similarly, we will grow salaries at 3% each year for salary-compensated employees to maintain a high employee turnover rate. We are confident that these benefits will attract experienced employees who share our company values and are eager to innovate in the pet accessories industry.

In regards to our outsourced labor costs, we will have to account for information systems staffing expenses. We will be outsourcing an on-call, part-time system and network administrator for years 1 to 5. This administrator will be paid \$12,000/year and mainly be in charge of configuring computer networks and systems. This employee will also handle any technical issues that may arise. Additionally, we will also account for one Software-as-a-System (SaaS) employee who will be responsible for managing our human resources management system (HRMS). This employee will be paid \$7,500/year from years 1 to 5.

PupPal's Production Requirements Necessitate a Strong Operations Team

OM Exhibit 15: OM Cost Breakdown In Percentages

% of Total Costs	Y0	Y1	Y2	Y3	Y4	Y5
Facility Costs	39.76%	4.15%	3.93%	2.59%	2.50%	2.37%
Staffing	16.89%	89.31%	89.87%	90.44%	91.84%	92.33%
Software	0.58%	4.94%	4.68%	4.85%	4.67%	4.44%
Hardware	1.44%	0.00%	0.00%	1.09%	0.00%	0.00%
IS	0.32%	1.61%	1.52%	1.03%	0.99%	0.86%
Machines	8.69%	0.00%	0.00%	0.00%	0.00%	0.00%
Transit Vehicles	32.32%	0.00%	0.00%	0.00%	0.00%	0.00%
Total %	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

As a product company, it is important that we have a strong operations team to support our business model. Considering that the PupPal is a technological product that requires specific attention to detail, our company wanted to properly allocate more time to our product assembly process. Therefore, a majority of our staffing costs are being paid out to full-time and part-time assembly and manufacturing workers (OM Exhibit 15). In addition, we have hired a skilled mechanical engineer beginning in the startup period to properly train our employees and a plant manager to ensure policies and procedures are followed. As production increases in year 3, we will also introduce a floor manager who is responsible for maintaining relationships with outside vendors and monitoring worker performance. This will allow us to facilitate check-ins with workers on compensation and job design issues that may arise.

Inventory Management

Inventory Management Plan Accounts for Seasonality, Risks, and Demand

Properly managing inventory is essential to satisfying our projected demand forecasts. Properly managing inventory also helps streamline our operations by determining the amount of labor and stock required for our hybrid aggregate plan without holding excess stock, thereby minimizing our inventory costs.

Over the forecasted period, our manufacturing price increases while our cost of goods sold decreases, thereby allowing our service level to increase from 91.86% in year 1 to a healthy 96.97% by year 5 (not including the startup period) allowing us to better meet our forecasted demand (OM Exhibit 16).

OM Exhibit 16: Service Level Projections

Year	Service Level					
	0	1	2	3	4	5
Manufacturing Price	\$ -	\$ 168.85	\$ 170.80	\$ 168.04	\$ 159.67	\$ 154.14
COGS	\$ 88.87	\$ 107.94	\$ 86.35	\$ 68.80	\$ 63.64	\$ 59.25
Cost of Shortage	\$ (88.87)	\$ 60.91	\$ 84.45	\$ 99.25	\$ 96.03	\$ 94.89
COGS	\$ 88.87	\$ 107.94	\$ 86.35	\$ 68.80	\$ 63.64	\$ 59.25
Holding Cost Rate	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%
Cost of Excess	\$ 4.44	\$ 5.40	\$ 4.32	\$ 3.44	\$ 3.18	\$ 2.96
Service Level	99.99%	91.86%	95.14%	96.65%	96.79%	96.97%
Z-Score	3.72	1.40	1.66	1.83	1.85	1.88

To prepare for the first 2 months of year 1 sales, we will start production 3 months prior to January. This time will allow for our manufacturing facility to streamline production processes prior to entering the market, such as hiring and training our workers and reducing our scrap rate as best as we can.

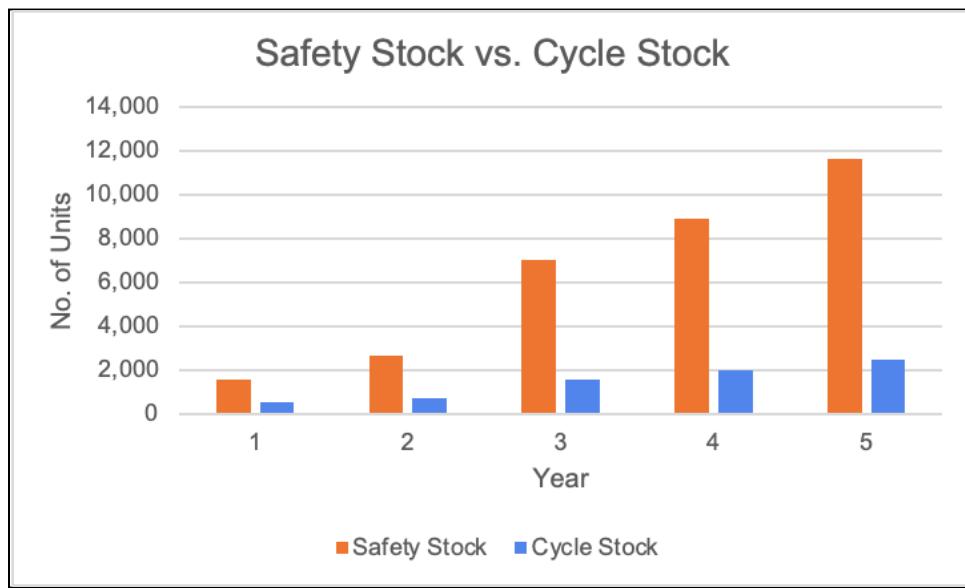
Our manufacturing facility has designated storage locations for raw materials storage, work-in-process storage, and finished goods storage. Storage points will be necessary, especially for the purposes of storing our finished goods pre-built stock in order to prepare for seasonal spikes in demand during the summer and holiday seasons. At the end of every working day and work week, our work-in-process inventory will be stored in its designated storage space situated near the manufacturing assembly line.

OM Exhibit 17: Safety Stock Growth Proportional to Forecasted Demand Growth



Our safety stock grows proportionally to our demand, increasing by approximately 650% from year 1 to 5 (OM Exhibit 17). Furthermore, it can be seen that the safety stock required more than triples in year 3. We have accounted for this during the initial conversion of our facility; therefore, despite the stark increase, we will not need to expand our manufacturing facility. Our product is also small in size and is packaged in a cubic box, making for easy storage and requiring little storage space.

OM Exhibit 18: Safety Stock Growth vs. Cycle Stock



Our safety stock is much larger than our cycle stock (OM Exhibit 18). This is such that we can protect ourselves from delayed shipments since almost half of our product parts come from foreign suppliers. The location of our facility (Kansas City, MO) is also to the east of “Tornado Alley,” an area in the Midwest prone to natural disasters; thereby, requiring we hold more safety stock to further mitigate the risk of supply disruptions from the west of the country.

Furthermore, over the 5 years, the number of assembly workers will progressively increase, thereby requiring more training. As such, we anticipate newer workers to be unable to produce output as planned, especially during their first few days or weeks on the job. The PupPal is a high priced, technology-based product which is of immense value to our company (being our only product); thus, will require we hold more safety stock in comparison to cycle stock.

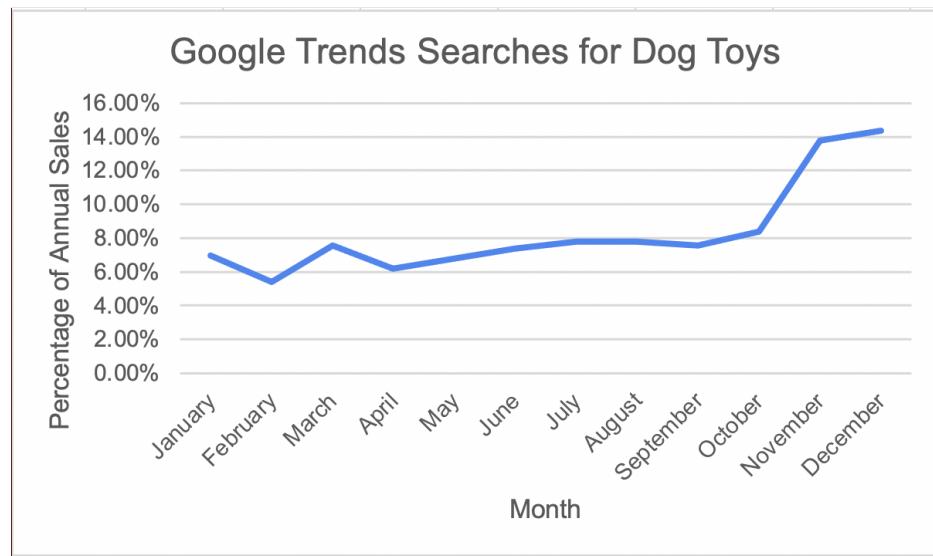
Our inventory as weeks of supply increases from 5 on hand in year 1, to 7 on hand in year 5 (OM Exhibit 19). We believe that this will help us not only utilize our storage spaces effectively, but also sufficiently help us mitigate the risk of stockout. The balance sheet (FE Appendix 2) reflects the total investment in inventory required for each year, which we believe to be appropriately valued, reflecting our ability to manage inventory according to forecasted demand effectively. With high and growing service levels as well as annual total inventory days close to that of 30 days, we are confident in our ability to be able to meet our customers' expectations.

OM Exhibit 19: Inventory as Weeks of Supply

Year	1	2	3	4	5
Total Inventory as Weeks of Supply	5.22	6.44	7.17	7.48	7.67

Aggregate Planning

OM Exhibit 20: Google Trend Searches for Dog Toys



Through our research, we noted trends of interest in dog toys during summer and winter months. As such, we have accounted for peak interest accordingly, producing and manufacturing more around these time frames. Using the percentages of search interest from Google Trends, we calculated our expected monthly demand and adjusted production to match our BASES Model²⁸.

²⁸ Data source: Google Trends <https://trends.google.com/trends/explore?cat=432&geo=US&q=dog%20toys>

Our aggregate demand plan will reflect an increase in production before the summer and the winter season.

Our aggregate demand in year 1 is based on our BASES sales projection. In year 1, we are expecting a yearly demand of 12,800 units (MK Appendix 14). We have calculated a regular capacity of 640 units per month. We will have one full time employee working 8 hours per day with 20 working days per month in year 1. For our peak months, we will be implementing one additional part-time worker beginning in April to the end of the year. This employee will make 480 units per month. Our total hybrid aggregate plan for year 1 is \$43,700 (OM Appendix 10). Though it is not the cheapest option, we felt best that we account for having an ending inventory of approximately 1,000-2,000 units each year to prepare for our expected demand. Our year 1 cost also accounts for a pre-built stock from the startup period of 2,000 units (OM Appendix 10).

OM Exhibit 21: Hybrid Planning Leads to Cost-Savings in Later Years

Year	1	5
Hybrid Plan + Pre-Build Stock (In Year 0)	\$43,703	\$249,525
Chase Plan	\$43,253	\$252,032
Level Plan	\$58,522	\$265,794

In year 5, we have an expected demand of 71,000 units with a regular monthly capacity of 4,500 units. To account for this increase, we will implement 7 full-time and 3 part-time workers for the entire year. Similarly to our year 1 aggregate plan, we will account for a beginning inventory from the previous year of 2,800 units (OM Appendix 11). Our total costs noted above for our hybrid model in year 5 is \$250,000. This is the cheapest option for year 5 (OM Exhibit 21). This is because our aggregate plan throughout the five years accounts for pre-built stock, which lowers our aggregate plan costs overtime.

Conclusion

The PupPal is designed to best address our four most important customer attributes (durability, ease of app navigation, ease of ball use, and safety), having incorporated safe and durable materials in the development of our product, and designing intuitive user interfaces for consumer convenience. Customer's satisfaction is key for our business. Internally, we have implemented immense quality assurance procedures, situating inspection points at the most vital areas of our process flow in order to reduce our scrap rate as much as possible. Furthermore,

through extensive location analysis, we have found Kansas City, MO to be the ideal location for our manufacturing facility, being well-situated to minimize transportation costs and proliferate the distribution of our product.

Externally, through multiple reviews of our target costing and market research, we have derived what we believe to be a price point that best values our product, satisfying consumers and generating healthy pre-tax profits. Our hybrid aggregate plan, inventory management, and service level models equip our company with the ability to be responsive to customer demands, ensuring their overall satisfaction with our company and product.

As such, we strive to streamline our internal and external operational processes to create an effective and efficient supply chain to meet the expectations of our potential consumers, embodying our value of building a tighter-knit community for dog fanatics.

Finance



PupPal

Finance

Value Proposition

PupPal's Novelty Will Captivate the Interest of Our Target Market

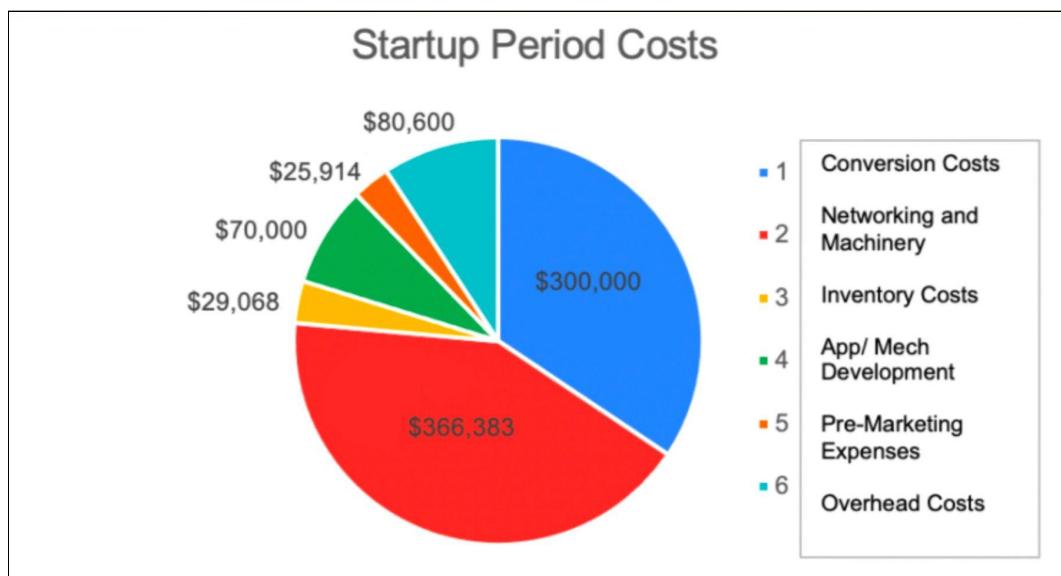
PupPal is a unique pet-tech product that merges the capabilities of interaction and surveillance into a fun toy for everyone to enjoy. This combination will make PupPal the only product of its kind on the market. In order to begin production, PupPal will require an initial investment of \$1.6 million. This investment will help us cover our costs for the startup period and our first year's forecasted negative cash flow.

Despite our positive net income of \$144,000 in year one, our cash flow remains negative due to our net working capital expenditures due to our inventory costs. Of the \$1.6 million required investment, \$250,000 will come from friends and family. We are asking for an external investment of \$1.35 million to cover the costs explained above. Our cash flows will break even in our second year of selling, which is when we will begin making dividend payments. Total investment is expected to be returned by our 4th year of production and the NPV of all dividends will total \$4.3 million (including years 6 and 7).

Startup Period

Startup Costs Include Pre-Launch Production to Account for Year 1 Demand

FE Exhibit 1: Startup Costs



To ensure we meet our year 1 sales projections, we will begin our manufacturing process during the start-up period 3 months prior to launch. We will prepare one month of our first year's supply in raw materials and work-in-process as well as 2 months into preparation of finished goods. This way, we will be prepared to begin sales on the first day of our year 1 operations. Above (FE Exhibit 1) are the startup costs that will be incurred, the majority of which come from initial investments in long term depreciable balance sheet items, such as networking equipment and additional machinery required. Other costs included are:

- An initial investment of inventory costs (\$29K)
- A one time cost for app and mechanical development costs (\$70K)
- Pre-marketing expenses such as a social media campaign, market research, and manufacturing representatives (\$26K)
- Initial overhead including startup salaries, rent, and insurance (\$81K)

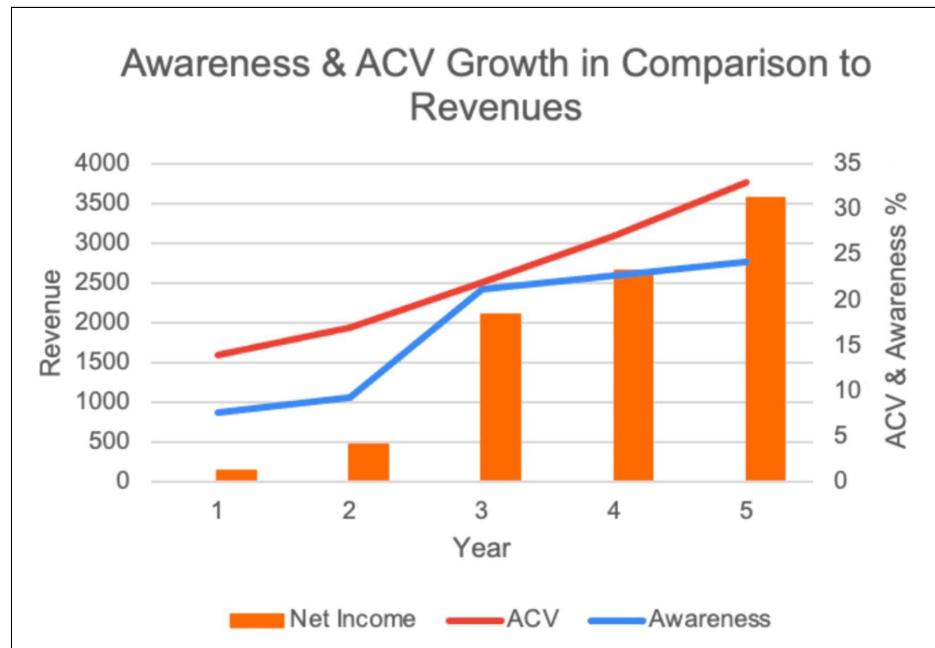
Growth

Awareness & ACV Increases Significantly Contribute to Healthy Revenue Growth

When PupPal enters the market, it will be the only product of its kind. As expected, initial awareness will be low, generating around 7.5% from fairs and events, online searches, and PR magazines. This focus will slightly increase to 9.3% in year 2 due to increased awareness from the same factors. In year 3, PupPal has an immense increase in awareness, increasing to 21% of our target market (FE Exhibit 2).

This increase can be attributed to factors such as magazine advertisements, carry over, increased online searches, and social media expenditures. In congruence with our awareness, our ACV increases 5% each year as we expand our sales channel into chains Chewy and PetCo in year 3. The increased awareness and ACV influences significant revenue growth from year two to year three (140%), and revenue growth continues to increase until our decline phase begins in year 6.

FE Exhibit 2: Awareness & ACV Growth Relative to Revenue



Direct Material Order Discounts Function as a Driver for Net Income Growth

The major factor contributing to the growth of PupPal's net income over the forecasted 5 years is the overall decrease in the dollar value of cost of goods sold. After informational interviews with suppliers, we concluded that for every 10,000 units ordered, our direct material costs would decrease by 3%. As our marketing efforts award us more awareness and our segment size increases, demand for PupPal will follow the same upscale trend (FE Exhibit 2).

Over time, we will encounter a need to order materials in higher quantities each consecutive year in order to keep up with our increasing demand. In years one and two, our order quantities remain under 20,000, resulting in a 3% discount for each of those years. In year 3 our significant demand growth leads to an increased order quantity that results in a 12% discount for our direct material costs. This discount is followed by a 15% and 18% order discount in years four and five, respectively (FE Exhibit 3).

FE Exhibit 3: Order Discount & Net Income



Ratios

Expense Reductions Drive Up Our Gross Profit Margins, Leading to Higher Net Income

The bottom line for any business is to achieve profit. PupPal's net income breaks even in our first year with net profit of \$144,000 (FE Appendix 1). In our second year, net income only increases by \$300,000 due to low awareness, ACV, and high direct material costs. In year 1 and 2, our COGS ratio hovers around 50% of our total sales while SG&A and marketing combine for approximately 30% of our sales.

The most significant trends that drive our eventually high net income are the overall decrease in our COGS as % of sales and increase in our gross margin over time. In year 5 the combined value of the expense ratios total a value slightly under 50%, a significant decrease from 86% in year 1, while our gross profit hovers above 60% of sales. This increase in gross profit and decrease in overall costs will eventually lead to a higher net income, which drives our high IRR and positive NPV.

FE Exhibit 4: Balance Sheet (Cash Conversion Cycle)

Income Statement Financial Ratios	Y1	Y2	Y3	Y4	Y5
COGS % Sales	52.18%	50.59%	39.37%	39.13%	37.49%
Gross Margin % Sales	47.82%	49.41%	60.63%	60.87%	62.51%
Net Income % Sales	6.68%	14.86%	28.34%	29.94%	32.42%
SG&A % Sales	25.72%	18.18%	11.76%	9.85%	8.13%
Marketing Expenses % Sales	8.00%	5.43%	4.46%	3.77%	3.17%

Our cash conversion cycle is relatively low throughout the years, signifying that our net working capital can be converted into cash flow many times per year. Our cycle remains low because 45% of our direct materials are sourced from China, and we assume that our days payable outstanding is zero for our Chinese suppliers (FE Appendix 5). As is expected, our cash conversion cycle increases throughout the years due to increases in direct material ordering, increased inventory, and overall sales. In year 5, we are able to convert our networking capital into cash almost 8 times.

Comparables

PupPal's Performance Relative to Competitors

FE Exhibit 5: Competitor Analysis

All From 2020	Bark Box	Chewy	Fresh Pet	Trupanion	PupPal (Y5)
ROA	N/A	-10.11%	-0.73%	-1.17%	175.07%
ROE	N/A	N/A	-7.93%	-1.72%	186.40%
COGS % Sales	39.64%	74.52%	58.31%	83.69%	37.49%
Gross Margin % Sales	60.36%	25.48%	41.69%	-0.98%	62.51%
Net Income % Sales	-13.98%	-1.32%	-1.00%	-1.16%	32.42%
SG&A % Sales	51.66%	19.56%	42.32%	4.35%	8.13%
Marketing Expenses % Sales	20.57%	7.18%	0.21%	9.53%	3.17%

Our Return on Assets

PuPal has an incredibly high ROA compared to our competitors, signifying that we are very efficient on profiting from our assets. For every \$1 investment in our total assets, we project a \$1.75 gain. Compared to our competitors, PupPal's ROA is significantly larger, which can be attributed to the fact that these competitors all have negative net income. We did not include BarkBox because their SEC filings (via Northern Star Acquisition Company) does not include all relevant information as they are in the process of merging.

Our Return on Equity

Similarly to our ROA, our ROE is exponentially large in comparison to our competition. Our ROE signifies that we are efficient at using equity to generate income; for every \$1 invested in PupPal, we generate \$1.90 in income. Again, this stark comparison can very well be attributed to our competitors' negative net income. We did not include BarkBox because their SEC filings (via Northern Star Acquisition Company²⁹) does not include all relevant information as they are in the process of merging. We did not include Chewy in this comparison because their retained earnings was booked as "accumulated deficit" and thus, their equity was booked as negative as well.

Our COGS & Gross Profit as % of Sales

As previously stated, our direct materials discount is the main driver of our decrease in COGS/unit. In year 5, our discount on direct materials is 18%, thus our COGS is significantly lower. BarkBox's COGS has a negligible difference to PupPal's COGS. BarkBox is the most similar company to ours as they manufacture dog toys, which explains why our gross margin ratio is similar as well. Chewy and Trupanion offer services while FreshPet manufactures and sells food, so their cost structures are different, likely causing the stark difference in this ratio.

Our Net Income as %-of-Sales

PupPal's Net Income % is the only positive value in our comparison. Being that all of the comparable companies have negative net income, it is evident that our revenues are much higher than our total expenses. The value of our net ratio is 32%, signifying that we profit \$0.32 for every \$1 we make from our sales (FE Exhibit 5). Our competitors, on the other hand, do not share the same income efficiency as we do, likely due to either low sales volume or high value expenses.

Our SG&A as %-of-Sales

PupPal has a relatively low SG&A as a percentage of sales compared to our competitors. Notably, 8% of our sales is accounted for in our SG&A expenses. This low number can be attributed to our small size and relatively high revenues. PupPal will have one factory which will

²⁹ Northern Star Acquisition Corp., Form 8-K Northern Star Acquisition Corp., February 16th, 2021. 133

have the ability to house all of our administrative and direct labor workers. All of our costs are allocated to a refined area making our expense structure simpler and more refined than our much larger competition.

Our Marketing as % of Sales

Marketing as a percent of sales can be interpreted in many ways because marketing efforts can vary from year to year. Some campaigns are more expensive than others, and if a brand is already established, they can afford to spend less on marketing. In this case, PupPal is not an established company, yet our marketing expenses as a percent of our sales is low in comparison to our competitors. This is not because we are not focussed on our marketing efforts, but rather because we are not investing in billboards or public advertising that incurs real estate expenses.

Terminal Value

In order to estimate the terminal value of PupPal's future cash flows, we based our calculations on a seven year product lifecycle. We chose this life cycle based on the life cycle of Blu-Ray, which encountered similar situations that we predict for PupPal³⁰. Blu-Ray entered the market as a disruptor, experienced increased competition by streaming services, and was eventually phased out by competition and new technology. Unlike Blu-Ray, PupPal's decline phase does not mean that we are unable to compete with competitors moving forward, but rather, it leaves room for a new product.

We expect competition and technology to phase out PupPal by 10% in year 6 and an additional 15% in year 7. We chose these numbers based on research stating that the pet accessories market will grow 5.6% per annum from 2020-2027³¹. We expect our cash flows to decrease by 10% in year 6 (rounding that predicted CAGR down) and then continue decreasing by 5% in the next year. We would stop production of the original product in 7 year to avoid

³⁰ "The Product Life Cycle of Blu-Ray Players," prezi.com, accessed April 26, 2021, <https://prezi.com/ueflufgn2d9p/the-product-life-cycle-of-blu-ray-players/>.

³¹ "Global Pet Accessories Market - Industry Trends and Forecast to 2027," Pet Accessories Market – Global Industry Trends and Forecast to 2027 | Data Bridge Market Research, accessed April 26, 2021, <https://www.databridgemarketresearch.com/reports/global-pet-accessories-market#:~:text=Pet%20Accessories%20market%20is%20expected,products%2C%20care%20products%20and%20others.>

losses. The terminal value is calculated to be \$2.7 million. Therefore, to avoid losses, we will stop production in year 7 (FE: Exhibit 6).

Competition will be fierce, and as the market grows, improved versions of our product will enter the market. However, we expect our product to maintain awareness and be seen as a pioneer. When PupPal introduces its new premium product, we expect that we will have no issue recapturing our previous clients and captivating new ones.

NPV, IRR, & WACC

WACC

Our minimum required return of 25% for our product was calculated using the following parameters.

- 1.68% ten year treasury yield³²
- 10% average return for S&P 500³³
- 1.43 β value based on BarkBox³⁴
- 11.65% small company risk premium³⁵

NPV/IRR

Our cash flows break even in our second year of selling and continue to grow until our decline phase beginning in year 6. Our cash flows in years 6 and 7 stay above \$2 million, yielding a terminal value of \$4 million. The NPV of our 7 year life cycle is \$2.7 million, with an IRR of 60%. Being that we have positive NPV and an IRR that is significantly higher than our WACC, PupPal bodes as a good investment. Additionally, there is a 35% difference between our lowest required return and our IRR signifying that our cash flows are stable and profitable over a wide range of discount rates.

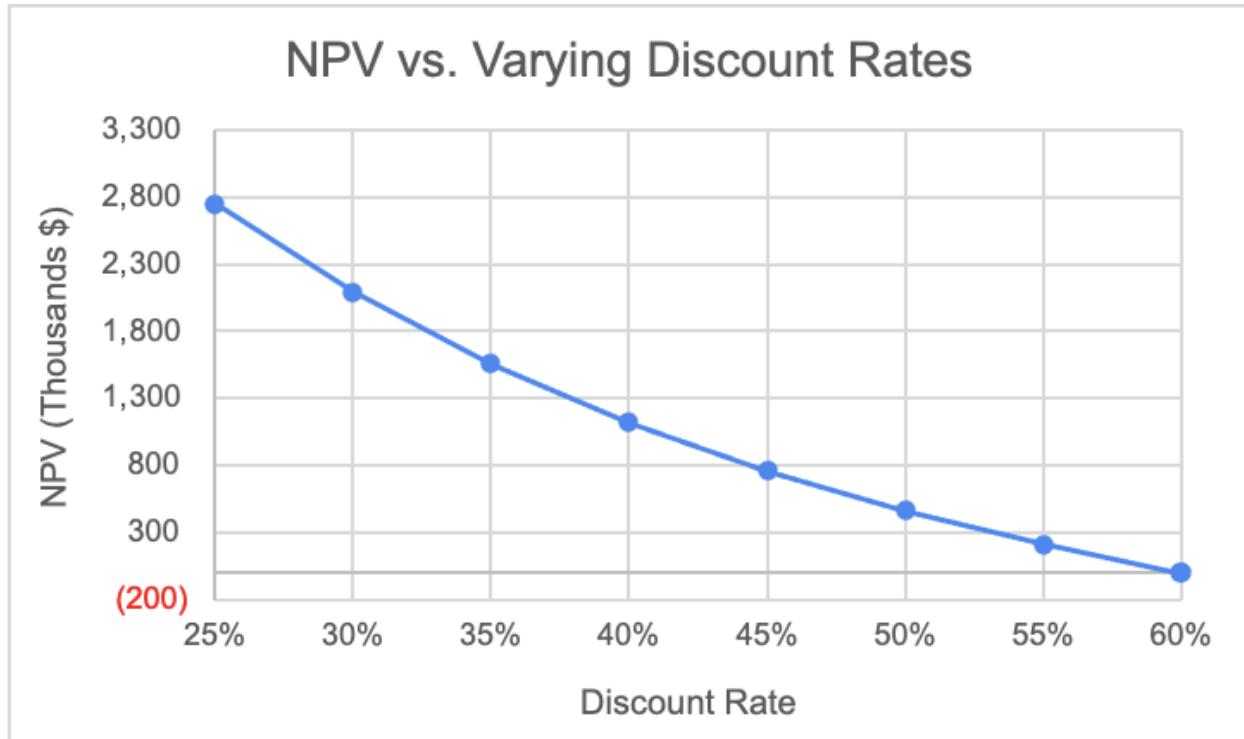
³² "Check out US TREASURY-CURRENT 10 YEAR's Stock Price (US10Y) in Real Time," CNBC (CNBC), accessed April 26, 2021, <https://www.cnbc.com/quotes/US10Y>.

³³ J.B. Maverick, "What Is the Average Annual Return for the S&P 500?," Investopedia (Investopedia, August 26, 2020), <https://www.investopedia.com/ask/answers/042415/what-average-annual-return-sp-500.asp>.

³⁴ "STIC Stock Price: Northern Star Acquisition Corp. Stock Quote (U.S.: NYSE)," MarketWatch, accessed April 26, 2021, <https://www.marketwatch.com/investing/stock/stic>.

³⁵ Duff & Phelps, "Risk Premium Report 2013", 2013, via Duff & Phelps, accessed April 26, 2021.

FE Exhibit 6: NPV vs. Varying Discount Rates



Conclusion

Investors in PupPal will take part in a pioneer company in an ever-growing industry. The pet accessories and overall pet market was one of the only industries that saw growth during the recession in the pandemic.³⁶ No matter the situation, individuals and families everywhere will always have a fascination with dogs. PupPal will introduce a new and intriguing way for owners and dogs to interact, while also establishing profitable returns for investors.

Beyond our large target market, our product has impressive forecasted cash flows (FE Appendix 4) and our EBIT breaks even in our first year of sales, despite our high cost ratios. The additional money required to fund our operations during the startup period totals \$1.6 million. Investments will be compensated quickly, and inventors can expect to begin receiving their money back by our second year of sales. Additionally, investors will make back 124% of their investment by the end of our fourth year of selling. Our IRR implies an average of 60% annual return generated from our cash flows, which is 35% larger than the minimum required rate of

³⁶ Jack Daly, "Pet Grooming & Boarding in the US," IBISWorld, January 2021, <https://my-ibisworld-com.ezproxy.bu.edu/us/en/industry/81291/about>.

return predicted by the market. Our NPV of \$2.7 million is a strong indicator of profitability, which greatly exceeds our breakeven point.

Even though competition and increased technology will eventually phase out our initial product, we do not expect PupPal as a whole to disappear from the market. We find that there is a considerable amount of potential for growth and moreover, creation of an improved product. With our overall expenses decreasing each year, we can allocate some of our net cash to research and development. With our ACV, we expect to continue strengthening supplier relationships, and take advantage of the multitude of channels we sell through.

PupPal provides value through a unique and innovative way, and our one-of-a-kind product will exact lasting awareness to customers. Our reputation as a premium, high quality product will aid in our efforts to recapture and expand our future market presence. PupPal's future endeavours will continue to provide investors with lucrative opportunities for years to come.

Risk



Assessment & Management



Cross-Functional Risk Assessment and Management

Conjoint Analysis

Conjoint Analysis Findings Enabled us to Read and React to Initial Consumer Preferences

In the developmental stages of our product, we conducted a conjoint analysis survey. This was derived from our product's most variable attributes in order to better understand the most preferred profiles among our customer base. While we did not *fully* implement the ideal profiles in our final design, the survey results significantly impacted our later decision-making points.

The four attributes that we chose for our product profiles were price, ball material, ball texture, and speaker location. Obtaining a primary opinion on price was important for estimating purchase intent. An appropriate ball material, texture, and speaker location is essential for both the safety and durability of the product, which we identified as some of the two most important customer attributes in our House of Quality (QM Exhibit 2). Each of the attributes chosen contained two levels of options (QM Exhibit 1), and survey-takers were asked to rank their interest on each of the 9 combinations on a scale of 1 (strong dislike) to 7 (strong liking).

QM Exhibit 1: Conjoint Analysis Attributes & Levels

- **Price:** \$175 vs. \$200 vs. \$225
- **Sleeve Material:** the material of the washable/removable sleeve that will cover the gyroscopic ball (Vulcanized Rubber (the material tires are made of) vs. Thick Nylon)
- **Sleeve Texture:** the texture of sleeve that will cover the gyroscopic ball (Smooth vs. Pocked (like a golf ball))
- **Speaker Location:** The location of the speaker i.e. where your voice will be projected from (On the Ball vs. On the Camera)

In total, we surveyed 45 individuals, with the results displayed in the table below:

QM Exhibit 2: Conjoint Analysis Survey Results

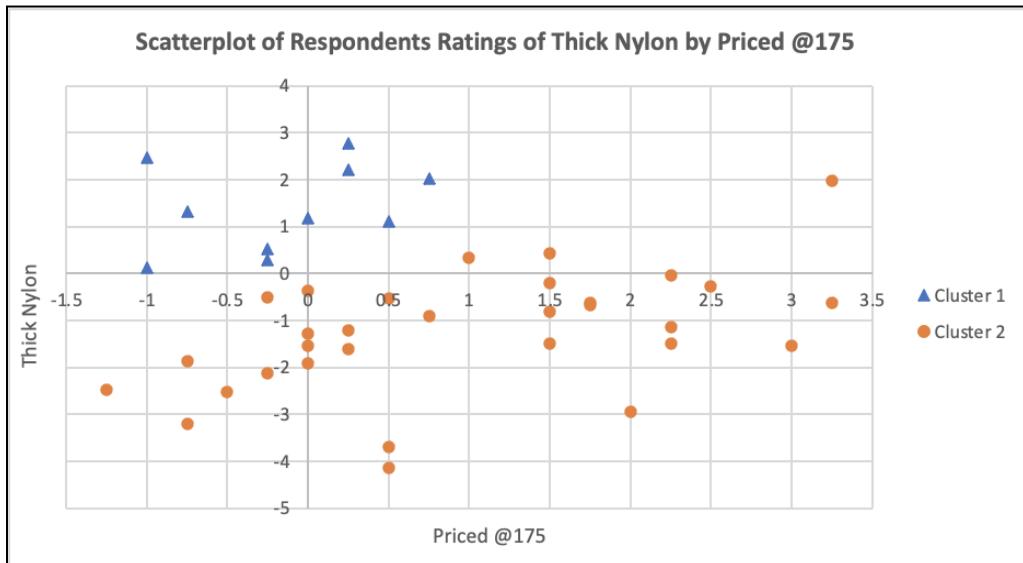
	Average	StdDev	Max	Min
Intercept	4.52	1.57	7.18	1.02
\$225	-0.55	0.94	2.93	-3.02
\$175	0.70	1.22	3.25	-1.25
Thick Nylon	-0.61	1.66	2.77	-4.13
Pocked	0.28	0.96	2.47	-1.87
Speaker on Camera	-0.47	0.95	1.73	-2.40

*Intercept Profile: \$200, Vulcanized Rubber, Smooth, Speaker on Ball

Analyzing the results, we can conclude that while defining ourselves as a premium tech product, consumers preferred our product at a lower price. On average, consumers preferred a price of \$175 over \$200 by 0.75 partworth points (on the 1 to 7 rating scale) while favoring the base price of \$200 over \$225 by 0.55 points. As the price increases by \$25, the average rating decreases, which matches with a conventional downward-sloping demand curve.

Taking these numbers into account, we ran a cost-benefit analysis to decide whether or not we should implement all of the initial attributes considered. We found that from an engineering perspective, the two-way audio capability would require greater app development and material costs. Therefore, we changed our design to only include one-way functionality with the speaker, which will play preset sounds (e.g. squeaks) from the app.

QM Exhibit 3: Ball Sleeve Material Scatterplot



We further analyzed the relationship between purchase intent and ball material using a scatter plot (QM Exhibit 3). Cluster 1 respondents preferred thick nylon over rubber and were relatively price insensitive. Cluster 2 respondents preferred rubber and exhibited greater sensitivity to price. The average rating for vulcanized rubber was higher than thick nylon by 0.61 points (QM Exhibit 2). However, material preference exhibited the highest standard deviation at 1.66 points, indicating less of a clear consensus. While these combinations yielded interesting results, we scrapped both material options and opted for high-density polyethylene due to durability concerns and feedback from Boston University engineers.

For the ball's texture, we found that consumers preferred a pocked surface over a smooth one. This attribute had the lower partworth point, which means that it holds the least significance among all variables in the survey. Nonetheless, we opted for a pocked texture in the final design. Most respondents indicated a preference for the speaker to be housed within the ball rather than on the camera. This affirmed our initial concern that having the speaker on the camera would deter the dog's attention from the ball.

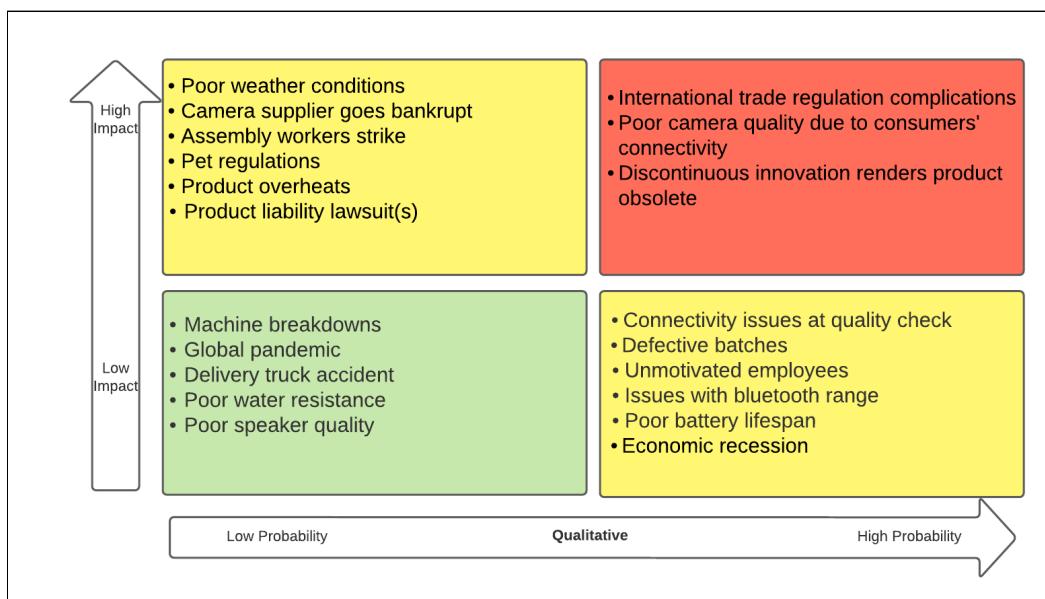
Influence Chart

Influence Chart Visualizes What Parameters Affect Net Present Value

To better understand the various risks associated with our company, we created an influence chart (QM Appendix 4), which highlights important parameters that we will consider for sensitivity analysis. Net present value (NPV) is the objective parameter, with some financial factors varying depending on market conditions outside of our control. However, most of the marketing and operations parameters feeding into our financials (and therefore NPV) are derived from costs and aspects unique to our company. Included in these variables are marketing expenses, ACV, purchase intent, segment size, direct labor and material costs, overhead, and SG&A, to name a few.

Qualitative Risk Matrix

QM Exhibit 4: Qualitative Risks Considered for Our Business



Listed above are the qualitative risks that we believe could potentially impact our business (QM Exhibit 4). We have ordered them based on their relative probability of occurrence and their impact in the event that they do. Parameters in the bottom left corner indicate a low probability of occurrence and low impact even if they were to take place. Highlighted in yellow

are parameters having either high probability or high impact, thus we should remain vigilant of these and work to consistently improve our operations to reduce their likelihood.

Risks in red indicate a high probability *and* high impact, meaning we must monitor them with close attention. Since more than half of our product parts are being imported from China, our company is highly susceptible to international trade regulations. An unfavorable import rate could result in purchasing more domestic parts, which might increase our cost per unit. However, should all of our parts come from the US, our lead times would significantly decrease. A shorter lead time means our safety stock and in transit stock for raw materials decreases as well, and must be accounted for.

Other problems include the possibility that the consumer might perceive the camera quality to be poor due to their own connectivity, which we address by incorporating optimal product setup into the instruction manual that comes with our product. Eventually, new technologies will make this version of our product become outdated.

Sensitivity Analysis

QM Exhibit 5: Parameters With Sensitivity Results

	Function	Starting Value (Base case)	Breakeven Value	Breakeven Change %	Margin of Safety %	NPV with 1% increase	Change in NPV with 1% increase	Elasticities (% change due to 1% increase)	Impact	Probability
Average Retail Price	MK	\$290	\$347	20%	-20%	\$2,581,877	\$ (137,489)	5%	High	High
Total Units Demand	MK	12,789	9,885	-23%	23%	\$2,839,200	\$ 119,835	4%	High	High
Segment Size	MK	16,570,000	12,807,828	-23%	23%	\$2,839,200	\$ 119,835	4%	High	High
Purchase Intent	MK	7.28%	5.62%	-23%	23%	\$2,838,601	\$ 119,236	4%	High	Low
Awareness	MK	7.58%	5.85%	-23%	23%	\$2,838,601	\$ 119,236	4%	High	High
Direct Material Cost/Unit	OM	\$46	\$79	71%	-71%	\$2,681,005	\$ (38,360)	1%	High	High
Fixed Administrative Expenses	OM	\$413,660	\$1,293,716	213%	-213%	\$2,706,583	\$ (12,782)	0%	Low	Low
Direct Labor Cost/Unit	OM	\$31	\$111	258%	-258%	\$2,708,979	\$ (10,386)	0%	Low	High
MOH Expense	OM	\$256,050	\$1,124,122	339%	-339%	\$2,711,344	\$ (8,021)	0%	Low	Low
Average Manufacturing Price	MK	\$169	\$982	482%	-482%	\$2,712,682	\$ (6,683)	0%	Low	High
Raw Material Discount Rate	OM	3.00%	-10%	-433%	433%	\$2,725,827	\$ 6,462	0%	Low	High
Marketing Expenses	MK	\$172,760	\$977,033	466%	-466%	\$2,713,524	\$ (5,841)	0%	Low	High
Inbound Freight Costs	OM	\$48,112	\$428,643	791%	-791%	\$2,722,570	\$ 3,205	0%	Low	High
Hourly Rate For Assembly Workers	OM	\$13	\$132	914%	-914%	\$2,716,370	\$ (2,995)	0%	Low	High
Outbound Freight Costs	OM	\$16,818	\$403,698	2300%	-2300%	\$2,718,173	\$ (1,192)	0%	Low	Low

Marketing Parameters

Marketing and operations make up two fundamental areas of our business. Based on our prediction and judgment, we chose fifteen parameters, seven from marketing and eight from operations, to run the sensitivity analysis to determine which factors would affect our NPV most significantly (QM Exhibit 5). Amongst all these factors, the product retail price imposes the most significant impact on our NPV. When retail prices are raised by 1%, NPV is projected to

decrease by 5.1% , from \$2.7 million to \$2.6 million. This is the most elastic parameter, as a 16% increase of the retail price would lead to a negative NPV.

Following the retail price, parameters that most highly impact NPV are segment size, total units demanded, purchase intent, and awareness. These parameters exhibit similar elasticities of 4.4% on NPV due to them functioning as multipliers that generate the total forecasted units. This association is significant, as a 1% raise in any of the aforementioned parameters yield an additional \$120,000 of profits.

Considering market uncertainty, all five parameters could be influenced by multiple factors, including but not limited to marketing execution, shifts in social trends, changes in consumer preferences, and the emergence of competitors. Therefore, we categorize them as both high probability and high-risk with the exception of purchase intent, which holds a lower probability since it is the most controllable variable.

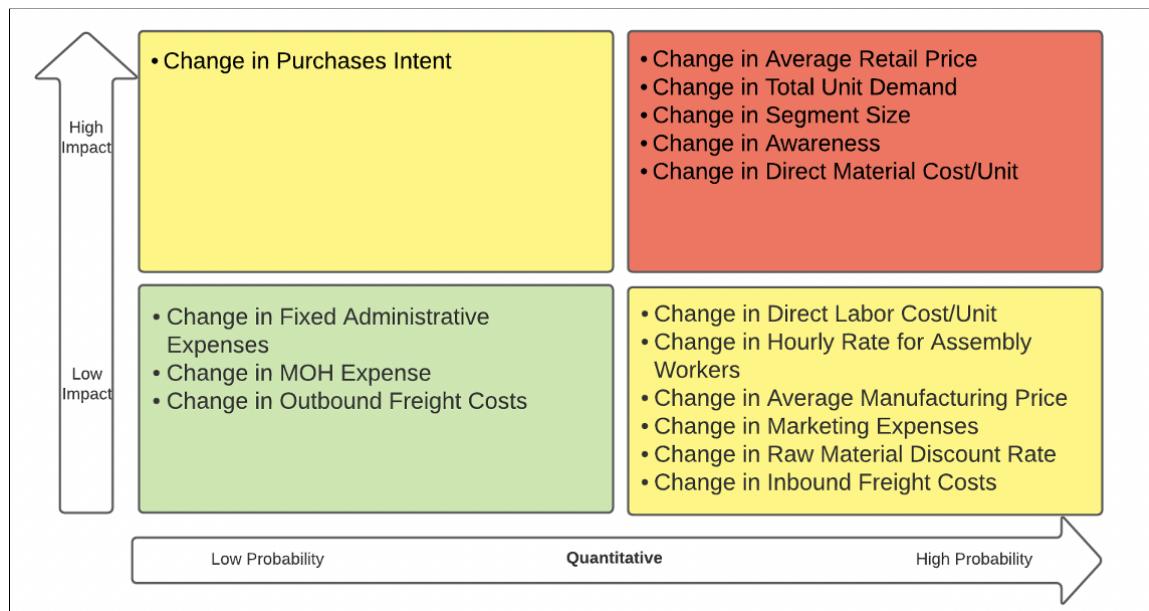
Operations Parameters

While NPV exhibits more sensitivity to some of our marketing parameters, our operations variables are another indispensable function to our business with high impacts on profit. A noticeable high-risk operations parameter is our direct material costs per unit. A 1% increase in our raw materials cost per unit could drop profits by \$38K (1.4% of our base case NPV). Since the product has rather complex components, there is a wide fluctuation in raw material component prices, depending on who and where we want to get our supplies from. Based on how different this cost might be from our projections, it may likely become a high-risk factor, especially if there is a need to upgrade raw materials in later years.

We then assessed how fixed cost, direct labor cost per unit, manufacturing overhead cost, and freight cost impact the profit. Results show that these parameters impose less than a 1% change on the NPV, and therefore are considered low impact factors. However, price oscillation of these parameters can still occur. Therefore, we still need to constantly monitor these factors to prevent a snowball effect that threatens our business.

Quantitative Risk Matrix

QM Exhibit 6: Quantitative Risks



Our quantitative risk matrix was adjusted and finalized after conducting sensitivity analysis. Again, those in the green were both low probability as well as low impact, and related to trivial changes in fixed administrative expenses or in manufacturing overhead expenses. Problems again related to either high probability or high impact were listed, such as changes in purchase intent, ACV, marketing expenses, and direct labor costs per unit.

The most significant parameters include those related to changes with significantly high impact and have high probabilities of actually occurring. A change in our average retail price was projected to be the most significant parameter that would affect our business. This is sensible as the change in price would result in a very reactive change in purchase intent and profitability. Other high-risk parameters are variable changes to our projected demand, segment size, awareness, and direct material cost per unit.

Simulation Analysis

Of the fifteen variables we chose for our sensitivity analysis, we ran simulations on segment size and direct material cost per unit. In our original calculations, our segment size was around 13 million, which was a result of an error in our calculations. After we adjusted this to the

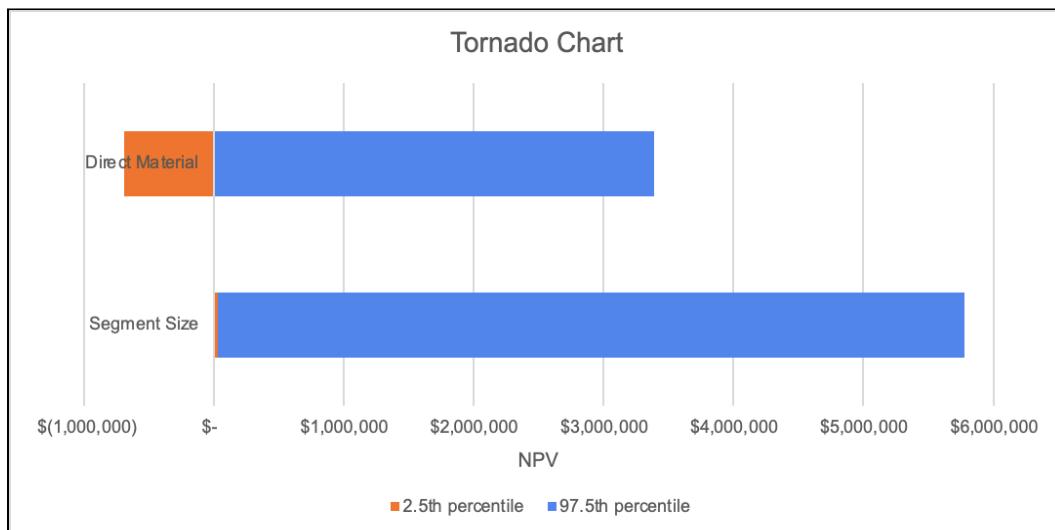
correct value of about 16 million, we noticed a significant change in our NPV and IRR, which we decided to investigate further. The other variable we chose was direct material cost per unit, as the cost is extremely high. This means any potential increase or decrease in cost would change our NPV and IRR significantly.

Below are the summary statistics for all three simulations, each with 1,000 iterations (QM Exhibit 7). The Tornado Chart represents the middle 95% of NPV outputs for our simulations (QM Exhibit 8). The purpose of using the middle 95% is to filter out outliers that fall below the 2.5th percentile and above the 97.5th percentile.

QM Exhibit 7: Simulation Summary Statistics

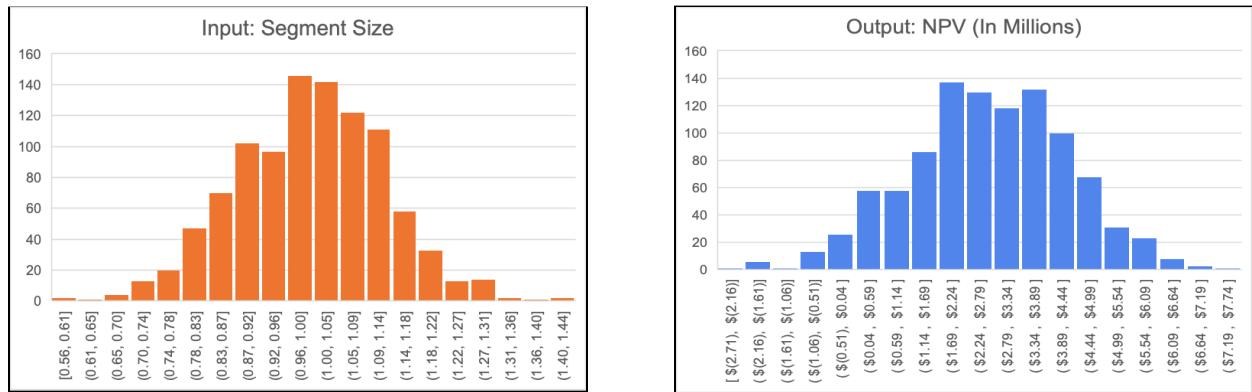
	Segment Size	Direct Material	All Variables
Average	\$ 2,698,430	\$ 1,649,669	\$ 1,650,624
Median	\$ 2,710,175	\$ 1,832,705	\$ 1,632,787
Standard Deviation	\$ 1,478,605	\$ 1,114,899	\$ 1,870,201
25th percentile	\$ 1,645,178	\$ 866,890	\$ 386,370
75th percentile	\$ 3,688,418	\$ 2,538,559	\$ 2,962,968
2.5th percentile	\$ 33,010	\$ (689,825)	\$ (1,939,640)
97.5th percentile	\$ 5,745,706	\$ 3,389,322	\$ 5,190,350
VaR@5%	\$ 352,180	\$ (443,696)	\$ (1,334,528)
Minimum	\$ (2,391,230)	\$ (1,386,802)	\$ (4,671,100)
Maximum	\$ 7,554,802	\$ 3,700,782	\$ 7,229,477
%NPV < 0	2.40%	9.60%	20.50%

QM Exhibit 8: Tornado Chart



Simulation 1: Segment Size

QM Exhibit 9: Simulation 1 Input and Output



For our first simulation on segment size, we utilized a normal distribution due to two factors (QM Exhibit 9). For one, the actual segment size should have an equal chance at falling either above or below the mean. Secondly, we felt there were unclear boundaries in determining segment size. We took the following steps to determine the standard deviation for our segment size (Refer to QM Appendix 1 for complete data table):

- Set up table with each variable from our segmentation tree listed with its base, minimum and maximum percentages
- Find minimum and maximum variance for each variable
 - These variances were assumptions we made for each segment of our segment tree
- Find product of each column to get the base, minimum and maximum percentages for dog owning households that fall under our segment
- Subtract minimum segmentation % from the maximum % and divided by the square root of six. This method is used to find the standard deviation of a triangular distribution.³⁷

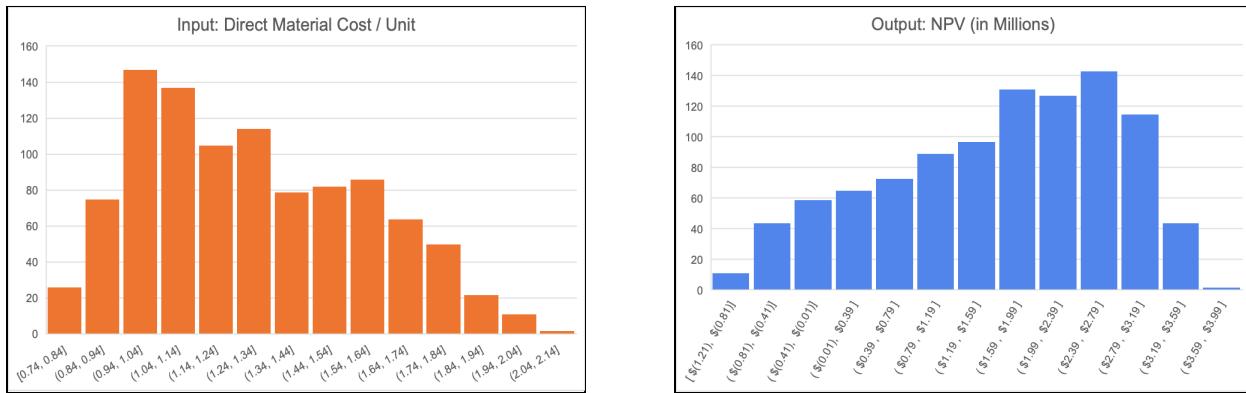
Using these steps, we calculated the standard deviation to be 12.5%. After running our simulation, we found that the average NPV was about the same as our actual NPV. Our simulation predicted a negative NPV (segment size below 12.8 million) only 2.4% of the time. Though we rarely have a negative NPV in this simulation, we noticed that our standard deviation of almost \$1.5 million is rather large. Keep in mind that this simulation reflects a change in only

³⁷ “Standard Deviations from Assumed Distributions,” 2.5.4.1. Standard deviations from assumed distributions, accessed April 26, 2021, <https://www.itl.nist.gov/div898/handbook/mpc/section5/mpc541.html>.

segment size. If another variable were to change unfavorably along with segment size, we have a higher probability of having negative NPV. The implications of this large standard deviation will be revisited under Simulation 3.

Simulation 2: Direct Material Cost per Unit

QM Exhibit 10: Simulation 2 Input and Output



For simulation two, we used a triangular distribution model (QM Exhibit 10). The maximum unit cost in the model reflects our price paid if we were to buy one component for each order. This is unrealistic considering we will be purchasing our components in bulk. The minimum cost represents if all purchased parts are low quality and purchased in massive bulk orders. Although minimizing cost is a priority, we must find a compromise between product quality and lower costs. Additionally, our order quantity makes it difficult for us to achieve the best possible discount rate. To determine the minimum and maximum multipliers for our simulation, we used the following steps (Refer to QM Appendix 2 for complete data table):

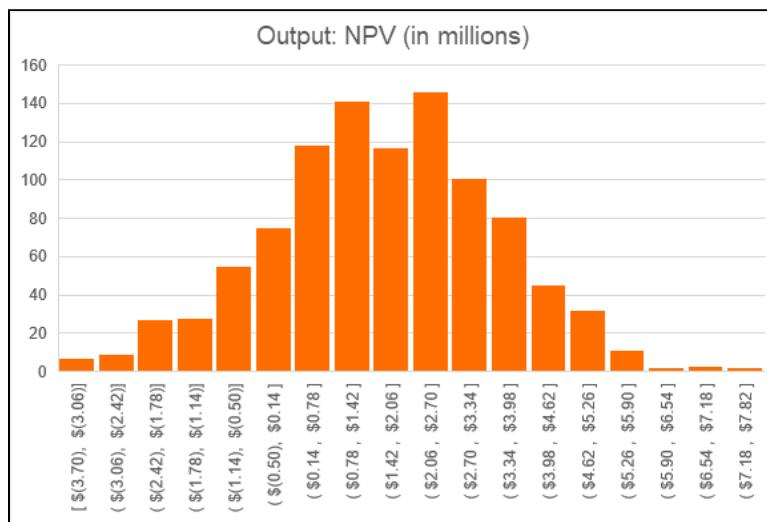
- Set up table with each individual component listed with its most likely, minimum, and maximum price
- Find sum to get the most likely, minimum, and maximum direct material price per unit
- Divide minimum and maximum sums by our base direct material cost to get lower and upper limit for our simulation

Through our research and using the steps listed above, we determined the minimum and maximum for this simulation to be 0.73 and 2.10, respectively (QM Appendix 2). Our simulation predicts that we will have an average NPV of \$1.65 million and will be negative 9.6% of the

time. As can be seen from the graphs above, the inputs are skewed to the right. This is reflective of the discrepancies with our minimum and maximum compared to our most likely value, which is why our average NPV is much lower than we expect. Based on our output chart, the expected NPV will fall between \$2.39 and \$2.79 million, with over 140 of the 1,000 iterations falling between this range (QM Exhibit 8).

Simulation 3: Both Segmentation Size and Direct Material Cost Per Unit

QM Exhibit 11: Simulation 3



Although the prior two simulations point out the risks if one variable fluctuates, this will be the case for almost all of the factors that go into NPV. In order to mimic a real business environment, we wanted to test how our business can be impacted by multiple factors at the same time. Therefore, for our third simulation (QM Exhibit 11), we ran segment size and direct material cost per unit simultaneously.

Holding other parameters and factors constant, the result of the 1,000 simulations shows that almost 80% of the time our business yields a positive NPV (QM Exhibit 8). Furthermore, there is a more than 25% chance that our business can exceed our projection of our current evaluation, obtaining a higher NPV and IRR.

On the other hand, more than 20% of our iterations had an NPV below zero. There are three possible scenarios in which NPV falls below zero in this simulation:

- Extremely low segment size relative to the expected mean (see Simulation 1: Segment Size)
- Direct material cost per unit well above our most likely direct material cost per unit (see Stimulation 2: Direct Material Cost Per Unit)
- Combination of low segment size and high direct material cost per unit

Although fluctuation of our segment size has a small possibility to bring our NPV to a negative point, the concurrence of low segment size and high direct material cost per unit will increase the likelihood of a negative NPV. With the thorough understanding of how the two high risks parameters affect our business, we are now able to discuss how to mitigate them.

Risk Mitigation Plan

Marketing Risk Mitigation

Awareness and demand make up our two major marketing risks. We aim to mitigate these risks by collecting data on consumer preferences, having clear product positioning, and generating compelling content. Prior to market entry, we have budgeted funds into marketing research with the objective of analyzing consumers' wants and needs to build a comprehensive targeting strategy. During the Zorb Ball Event, we will also collect consumer behavior data by asking them to complete our survey.

Throughout our company lifespan, we will continue to conduct surveys to ensure we are always listening to and meeting customer feedback. We plan to build the PupPal brand and vision into our website design and social media platforms, generating creative content to engage and educate consumers about PupPal's benefits. By taking these actions, we hope to consistently increase our awareness and boost demand, resulting in an increased NPV.

In regards to our simulation analysis, segment size plays a critical role in demand. Although a negative NPV for our segmentation simulation would be a rare occurrence based on our projections, we will invest more time and capital into primary-sourced data to attain a clearer segment size forecast. Our goal is to ensure that our segment size is as accurate as possible because of our high standard deviation for this variable.

Operations Risk Mitigation

To mitigate product quality and supply chain risks, we must build and maintain strong relationships with our suppliers. To further dissolve the risk of unpredictable incidents such as material shortage and supplier bankruptcy, facility managers will be required to maintain regular communication with all suppliers. Additionally, these relationships will help ensure that costs, such as direct materials, remain low while maintaining top notch product quality. To ensure that our risk mitigation strategies are working successfully, we will conduct quarterly surveys within our supply chain.

Aside from suppliers, we want to invest in quality workers at our own facilities. When production begins, a mechanical engineer will be hired to ensure high-quality products, which will increase our yield rate. We will set up training programs pertaining to operation management methodology, stating clear guidelines for our plant managers, floor managers, and quality assurance managers. This will minimize risks associated with inefficient production lines such as raw material defects and transportation schedule delays.

We care that all employees feel psychologically safe and empowered to voice any concerns. A weekly feedback system will be implemented for workers to bring up any concerns or suggestions, and managers will address these accordingly. To mitigate the risk of strikes, we commit our priority to ensure our employees are in a clean and safe environment. Our facilities are not only thoroughly planned to utilize all the space efficiently, but also include amenities such as a pleasant cafeteria, allowing employees to rest and socialize (OM Exhibit 8). Regarding the environmental risk of the factory, there will be periodic plant inspections and safety assessments to prevent safety hazards.

Conclusion

In light of the current COVID-19 pandemic, unstable economic situations and turbulent international relationships with other countries are more relevant than ever. As such, it is imperative that our business is evaluated from every aspect. Despite the company having a \$2.7 million net profit and a 60% IRR, the business will still inevitably encounter both quantitative and qualitative risks. These include supply chain crises, product quality drawbacks, inaccurate

assessments of the market, lack of product awareness, raw material cost increase, and many more unpredictable risks.

By conducting sensitivity analysis and simulations, we were able to prioritize high risk parameters and draft a comprehensive mitigation plan to minimize damage from potentially unforeseeable occasions. It is important to buffer for misvaluation in the market, and to avoid underestimating raw material cost. This can be done by investing in early stage market research and preparing inventory backups. The detailed mitigation plan will serve as our guide to thoroughly combating both marketing and operation risks. In the future, we will also continuously monitor risks and update the mitigation plan according to the business environment so that our business can quickly pivot and conquer all challenges.

Conclusion



Conclusion

PupPal stands strong by the ideal we carry: connectivity and love from anywhere. The COVID-19 pandemic has proven to be a tough time for many, and it is now more important than ever for friends and family to stay connected. Investors should highly consider an investment in PupPal as it is a one-of-a-kind product in the pet accessories market, and will produce a high return.

PupPal will strive to stay strong to its promise of connecting families from anywhere. We will market ourselves in a wholesome and playful manner while also positioning ourselves as a premium product. We will use various strategies such as magazine ads, social media postings, trade booth exhibits, and even creative marketing events to showcase our product as both high-tech and casual. As well as this, we will adhere to our CSR initiatives, promoting sustainability and support for dogs and owners alike.

Logistically, our supply chain and internal processes will be streamlined to maximize output as smoothly as possible. Based on our House of Quality, we have designed an innovative product that is both safe and easy-to-use. In regards to our production process, we are confident that our aggregate plan, inventory management strategies, and service capacities will support us in meeting forecasted demand. We also have incorporated ethical staffing procedures and quality protocol to align with our company values.

From a financial standpoint, PupPal will experience a large return on investment within four years after the start-up period. After 5 years the return on investment will total over \$3 million. As ACV and awareness grow, so will our revenue and profit. Within a few years, COGS will decrease significantly, drastically increasing our gross margin.

PupPal will make sure not to overlook any potential risks associated with starting our business. By defining the majority of problems that could occur, we can systematically prepare to avoid these problems to the best of our ability, while also mitigating unavoidable risks. We will especially take notice of the most impactful parameters, such as segment size and direct materials cost per unit.

Overall, PupPal is an investment that shows great promise. Through successful marketing strategies, efficient operational and financial management, and risk mitigation, our company will deliver a successful product that both our customers and investors can appreciate.

Appendices

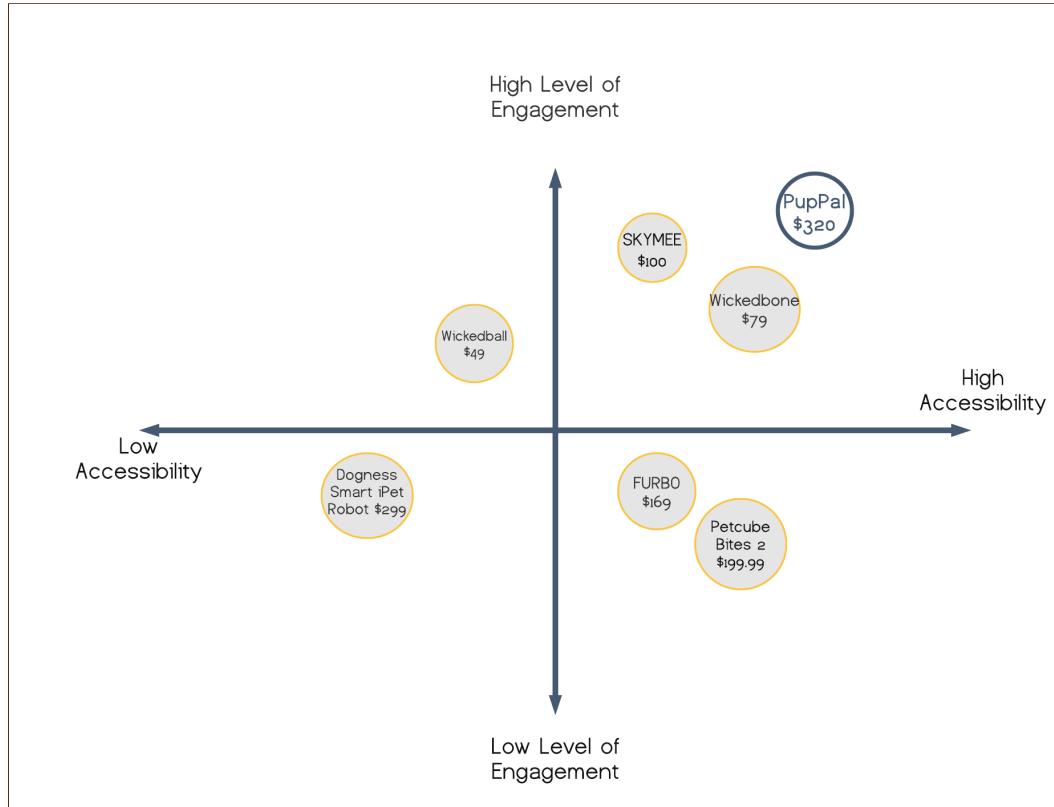
Intro Appendix: Competitor Analysis Indicates PupPal Offers Novelty and Purposeful Bundling

	PupPal	PetCube Bites 2 Wi-Fi Pet Camera & Treat Dispenser	Dogness Smart Pet Robot	Wicked Bone
Description and Benefits	Enables dog owners to actively remain engaged with their dogs while away from home	Allows owners to passively monitor their dog while away and dispenses treats at discretion	Offers interactivity with your pet and their surroundings with full 360 degree controls and views	Interactive and smart dog toy to keep your dog mentally stimulated and entertained
List Price	\$320	\$250	\$299	\$79
Strengths	<ul style="list-style-type: none"> - Novelty (active not passive) - Material and durability - Pre-bundled all-inclusive price 	<ul style="list-style-type: none"> - Accommodates for different sized dogs - Integrated with Amazon Alexa - Alerts owners of dog barks and sounds 	<ul style="list-style-type: none"> - Long battery life - Superior monitoring due to 360 camera - High quality microphone and speaker 	<ul style="list-style-type: none"> - Cheaper price point - Moves very dynamically / can have pre-set programmed moves
Weaknesses	<ul style="list-style-type: none"> - Expensive - Dependent on uncontrollable connectivity factors - Camera bound to one room 	<ul style="list-style-type: none"> - Video resolution poor for price - Lacks some basic attributes (i.e. longer charging cord and instructions) 	<ul style="list-style-type: none"> - Out-dated connectivity - Very loud motor, scares some dogs 	<ul style="list-style-type: none"> - Durability is questionable due to plastic - App availability - Battery lifespan

MK Appendix 1: Segmentation Grid

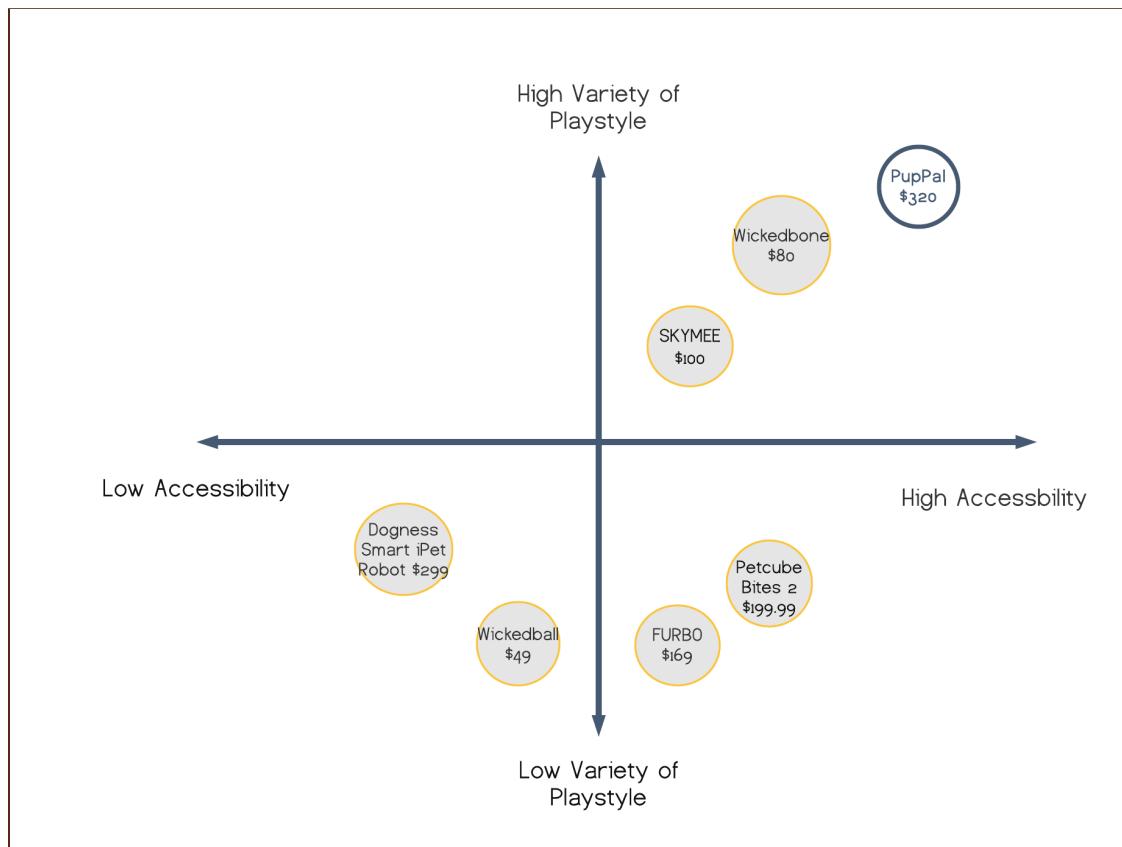
Segment Name	A: The Millennial Professional and her Golden Doodle	B: The Middle Aged Suburban Family and Their Lab	C: The Small Dog Scaredy Cat	D: The Old Dog Old Man
Segment Size	8.74 million	11.46 million	32.96 million	6.2 million
Demographics	Fully employed, owns an active and curious dog	High income suburban family, with younger children owns a middle aged dog	Individuals or families that own small dogs	Individuals or families with older and less active dogs
Psychographics	Feel secure using modern day technology, tends to spoil her young dog, want to take care of her energetic dog when she is away, willing to try new toys for her dog.	Parents about leaving dog at home, Feel secure to use surveillance camera, spoil their young puppy, love to try new toys for their dog.	Dogs that are intimidated and scared of automated balls, dogs that are overly anxious	Older and lazier dog and owners, tends to be more relaxed about their older pets
Key Influencers (if any)	New pet trends, friends, pet's interest, other dog owners	New pet trends, friends, pet's interest, other dog owners	TV, social media, pet stores and websites	Word of mouth from friends and family, the local newspaper, TV
Other Products Segment Buys	Treats, collar, pet bed, fancy dog toys, auto-feeder	Treats, collar, pet bed, cushion, pet translator	Cage, food, leash, toys, teething toys, dog bowl, collars and accessories	Food, doggie bags, treats
Key Product Attributes & Benefits Sought by Segment	Ability to engage and survey the puppy anywhere on the mobile device	Product durability, safety, engagement for the pets	Convenient, cheap, small	Reliable products, durable, easy to use products that aren't inconvenient for older dog
Maximum Price Segment Will Pay	\$275	\$275	\$100	\$50
Segment's Information Sources & Social Influences	Vlogger, Social media, friends, internet news, ads on the website	Local news, friends, headlines, news anchors, actors/actress, social media	Word of mouth, flyers, TV, social media	Word of mouth, newspaper, flyers, TV
Best Distribution Outlets to Reach Segment	Retail stores, e-commerce sites such as Chewy and Amazon	Local stores such as Brookstone, PetSmart, and e-commerce sites	E-commerce and retail stores	Retail chains
Best Media to Reach Segment	Social media, Facebook, Instagram, Snapchat, TikTok	Facebook, TV, magazines, newspapers, TikTok	Magazines, TV, Facebook, Instagram	Newspapers, TV, Facebook

MK Appendix 2: Positioning Map and Statement 1



PupPal allows for easy, on-the-go accessibility and stimulates high engagement levels between owners and dogs through its companion app.

MK Appendix 3: Positioning Map and Statement 2



PupPal has a flexible degree of control, creating an accessible variety of play styles (on-the-go, at home) for owners to interact with their dogs via the playcam control hub.

MK Appendix 4: Critical Learnings from Modes of Research

Mode of Research	Key Takeaways
Industry Trends	<ul style="list-style-type: none"> • Increase in pet ownership due to the pandemic, formulating stronger bonds between dogs and family due to quarantine • Shift away from niche pet stores, more into online distribution <ul style="list-style-type: none"> ◦ Target warmhearted and families wanting to connect more, explore benefits of selling through online channels (i.e. Chewy)
Social Media Listening	<ul style="list-style-type: none"> • Ages 18-34 are most receptive to social media, have highest WTP, and most interest in innovative dog products. • Market product through social media, using platforms such as Instagram, TikTok, and others <ul style="list-style-type: none"> ◦ Include a camera recording feature on the app with social media links
Consumer Insight Interviews	<ul style="list-style-type: none"> • Typically interested in product pitch • Many were intrigued by pet surveillance, especially those with an anxious attachment to their dog <ul style="list-style-type: none"> ◦ Play into PupPal's connectivity with reassuring potential customers of the ability to keep dogs safe and content • Customer Concerns <ul style="list-style-type: none"> ◦ Durability of the product
Expert Interviews	<ul style="list-style-type: none"> • Play into the uniqueness of our product • Returns might become a problem • Customers have to be attracted to product <ul style="list-style-type: none"> ◦ Needs aesthetically pleasing packaging • Customers needs to be assured PupPal is a quality product <ul style="list-style-type: none"> ◦ Assure both quality and durability
Qualtrics Questionnaire Results	<ul style="list-style-type: none"> • 140 respondents • Majority of respondents preferred product name “PupPal” • High demand for product from owners' dogs that frequently experience separation anxiety (27%) • Majority of consumers (78%) preferred price at the lowest price bracket (\$164-\$227) • The need to increase price to \$300 due to financial implications has dropped purchase intent from 9.49% to 8.22% • CSR initiatives would positively affect purchase intent, increasing it by 3%
Creative Workshop Feedback	<ul style="list-style-type: none"> • Interest in both magazine styles, consider merging both elements • Tone of product is high-tech yet casual • Strengthen brand character, play into connectivity • Definitive results for logo and slogan

MK Appendix 5: Integrated Marketing Communications Schedule Year 1

Year 1 IMC Schedule		JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	Total Cost	CPM	TOTAL Target Market Awareness
Segment Size: 16,570,000 households	PULL															
Magazine Ads (Not until year 3)	PAID													N/A		
Fairs/Events														\$42,960		2.58%
Pet Fair - Manchester, New Hampshire																
Toy Fair - New York, New York																
Kentucky State Fair - Louisville, Kentucky																
Dog Fair - Chester, Connecticut																
Ventura Street Fair - Ventura, California																
Bark in the Park - San Jose, California																
Comic Con - San Diego, California																
Seattle Mart Fall Show - Seattle, Washington																
Online (25% of total)														\$10,875		2.00%
Creative expenses @ 5% of total budget	EARNED													\$5,051		
PR Magazines and Blogs														\$20,000		2.00%
Magazines: Healthy Pet, Best Friends, All Animals, Family Dog																
Blogs: TechnoBark, DogTipper, iHeardogs, Dog Milk, Tucker Budzyn, Doug the Pug, Harlow and Stage, Loki the Wolfdog	OWNED															
Social Media Own website																
CSR Initiative																
CSR Initiative 1: \$1 to No Kill Shelters for Every Purchase																
TOTAL PULL																
Trade Shows	PUSH															
Global Pet Expo - Orlando, Florida																
Super Zoo - Las Vegas, Nevada																
St. Louis PetFest - St. Charles, Missouri																
Atlanta PetFair & Conference - College Park, Georgia																
Philadelphia Gift Show - Oaks, Philadelphia																
Trade Magazine Ads																
Pet Age																
Pet Business Magazine																
TOTAL PUSH																
TOTAL IMC SCHEDULE EXPENSES AS % OF SALES																
IMC SCHEDULE EXPENSES AS % OF SALES																
\$172,760																
8.00%																

MK Appendix 6: Integrated Marketing Communications Schedule Year 2

Year 2 IMC Schedule		JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	Total Cost	CPM	TOTAL Target Market Awareness
Segment Size: 16,805,761 households																Changes: Online awareness increases by 1% / Word of Mouth applied / Carry Over applied
PULL																
PAID																
Magazine Ads (Not until year 3)																
Fairs/Events																
Pet Fair - Manchester, New Hampshire																N/A
Toy Fair - New York, New York																\$42,960
Kentucky State Fair - Louisville, Kentucky																2.55%
Dog Fair - Chester, Connecticut																
Ventura Street Fair - Ventura, California																
Bark in the Park - San Jose, California																
Comic Con - San Diego, California																
Seattle Pet Fair Show - Seattle, Washington																
Online (25% of total)																
Creative expenses @ 5% of total budget																
PAID Magazines and Blogs																
Magazines: Healthy Pet, Best Friends, All Animals, Family Dog																
Blogs: TechnoBark, DogToper, iHeartdogs, Dog Milk, Tucker Buzzy, Doug the Pug, Harlow and Sage, Loki the Wolfdog																
Word of Mouth (WOM)																
Carry Over	OWNED															
Social Media																
Own website																
CSR Initiative 1: \$1 to No Kill Shelters for Every Purchase	CSR INITIATIVE															
	TOTAL PULL															
Trade Shows	PUSH															
Global Pet Expo - Orlando, Florida																
Super Zoo - Las Vegas, Nevada																
St. Louis Pet Fest - St. Charles, Missouri																
Atlanta Pet Fair & Conference - College Park, Georgia																
Philadelphia Gift Show - Oaks, Philadelphia																
Trade Magazine Ads																
Pet Age																
Pet Business Magazine																
	TOTAL PUSH															
TOTAL IMC SCHEDULE																\$169,762
IMC SCHEDULE EXPENSES AS % OF SALES																5.43%

MK Appendix 7: Integrated Marketing Communications Schedule Year 3

Year 3 IMC Schedule		JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	Total Cost	CPM	TOTAL Target Market Awareness
Changes: Online awareness increases by 3% / Word of Mouth applied / Carry Over applied / Magazine Ads applied (1 full page, 3 half page) / Creative Marketing Idea applied																
Segment Size: 17,039,557 households	PULL															
PAID																
Magazine Ads																
Healthy Pet (Full-page)														\$94,085	2.63%	
Best Friends (1/2-page)														\$73,500	2.11%	
All Animals (1/2-page)														\$3,890	0.13%	
Family Dog (1/2-page)														\$10,600	0.26%	
Fairs/Events														\$6,095	0.14%	
Pet Fair - Manchester, New Hampshire														\$42,960	4.30%	
Toy Fair - New York, New York																
Kentucky State Fair - Louisville, Kentucky																
Dog Fair - Chester, Connecticut																
Ventura Street Fair - Ventura, California																
Bark in the Park - San Jose, California																
Comic Con - San Diego, California																
Seattle Mart Fall Show - Seattle, Washington																
Online (25% of total PULL)																
Creative Marketing idea: Hamster Ball in dog park																
Creative expenses @ 5% of total budget	EARNED															
PR Magazines and Blogs																
Magazines: Healthy Pet, Best Friends, All Animals, Family Dog																
Blogs: TechnoBark, DogTamer, iHeartdogs, Dog Milk, Tucker Budzyn, Doug the Pug, Harlow and Sage, Loki the Wolfdog																
Word of Mouth (WOM)																
Carry Over	OWNED															
Social Media																
Own website																
CSR Initiative	CSR INITIATIVE															
CSR Initiative 1: \$1 to No Kill Shelters for Every Purchase																
TOTAL PULL																
PUSH																
Trade Shows	PUSH															
Global Pet Expo - Orlando, Florida																
Super Zoo - Las Vegas, Nevada																
St. Louis Pet Fest - St. Charles, Missouri																
Atlanta Pet Fair & Conference - College Park, Georgia																
Philadelphia Gift Show - Oaks, Philadelphia																
Trade Magazine Ads																
Per Age (Full-page)														\$6,570	0.22%	
Per Business Magazine (Full-page)														\$8,285	0.00%	
TOTAL PUSH														\$59,835	3.00%	
IMC SCHEDULE EXPENSES AS % OF SALES														\$330,746	4.46%	

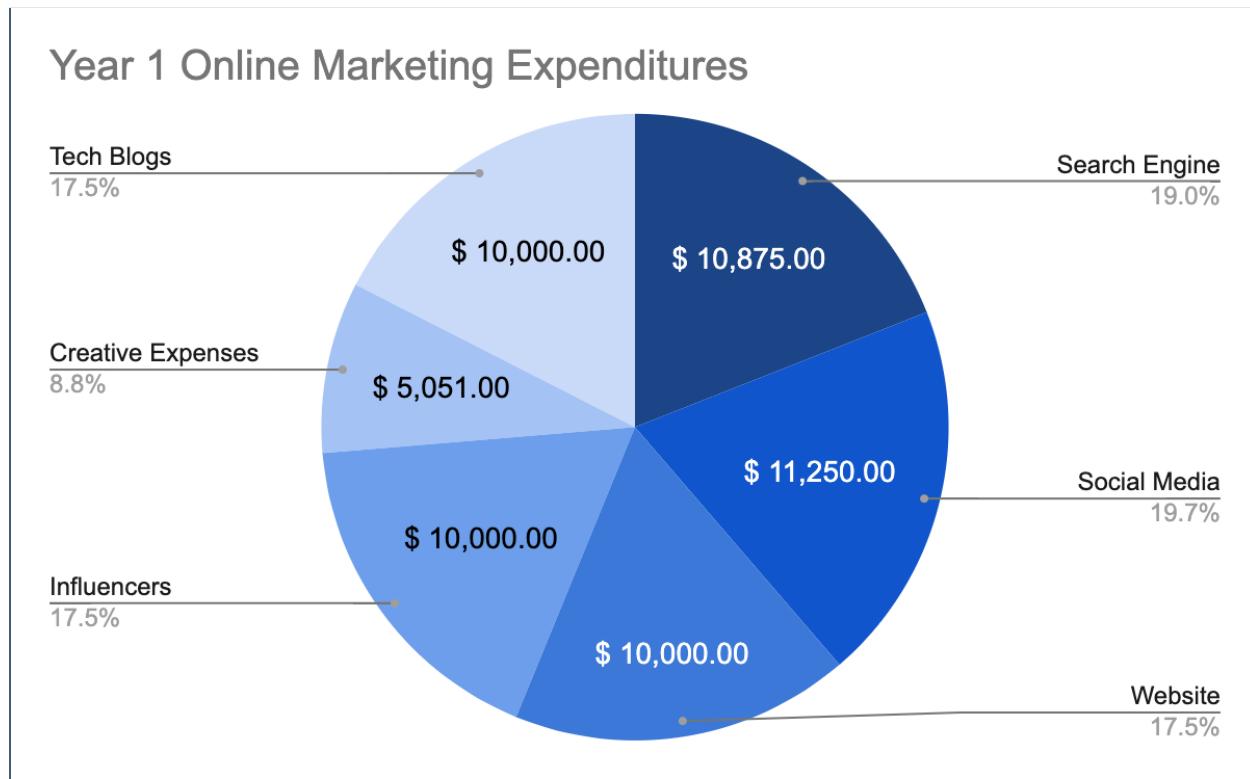
MK Appendix 8: Integrated Marketing Communications Schedule Year 4

Year 4 IMC Schedule		JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	Total Cost	CPM	TOTAL Target Market Awareness
Changes: Online awareness increases by 1% / Word of Mouth applied / Carry Over applied / Magazine Ads applied (2 full page, 2 half page) / 1 less Trade Show / 1 less Trade Magazine																
Segment Size: 17,240,042 households	PULL															
Magazine Ads	Paid															
Healthy Pet (Full-page)														\$101,885	2.63%	
Best Friends (1/2-page)														\$73,500	2.11%	
All Animals (Full Page)														\$3,890	0.13%	
Family Dog (1/2-page)														\$18,400	0.26%	
Fairs/Events														\$6,095	0.14%	
Per Fair - Manchester, New Hampshire														\$42,960	4.30%	
Toy Fair - New York, New York																
Kentucky State Fair - Louisville, Kentucky																
Dog Fair - Chester, Connecticut																
Ventura Street Fair - Ventura, California																
Bark in the Park - San Jose, California																
Comic Con - San Diego, California																
Seattle Marf Fall Show - Seattle, Washington																
Online (25% of total OF PULL)														\$39,761	7.00%	
Creative Marketing idea: Hamster Ball in dog park														\$6,200	1.00%	
Creative expenses @ 5% of total budget	EARNED													\$11,069		
PR Magazines and Blogs														\$20,000	2.00%	
Magazines: Healthy Pet, Best Friends, All Animals, Family Dog																
Blogs: TechnoBark, DogTipper, iHeartdogs, Dog Milk, Tucker Buczyn, Doug the Pug, Hanlow and Sage, Loki the Wolfdog																
Word of Mouth (WOM)																
Carry Over	OWNED															
Social Media																
Own website																
CSR INITIATIVE																
CSR Initiative 1: \$1 to No Kill Shelters for Every Purchase																
TOTAL PULL																
PUSH																
Trade Shows																
Global Pet Expo - Orlando, Florida														\$37,000		
Super ZOO - Las Vegas, Nevada																
Atlanta Pet Fair & Conference - College Park, Georgia																
Philadelphia Gift Show - Oaks, Philadelphia																
Trade Magazine Ads																
Per Age (Full-page)														\$6,570		
TOTAL PUSH														\$43,570		
TOTAL IMC SCHEDULE														\$133,687	3.77%	
IMC SCHEDULE EXPENSES AS % OF SALES																

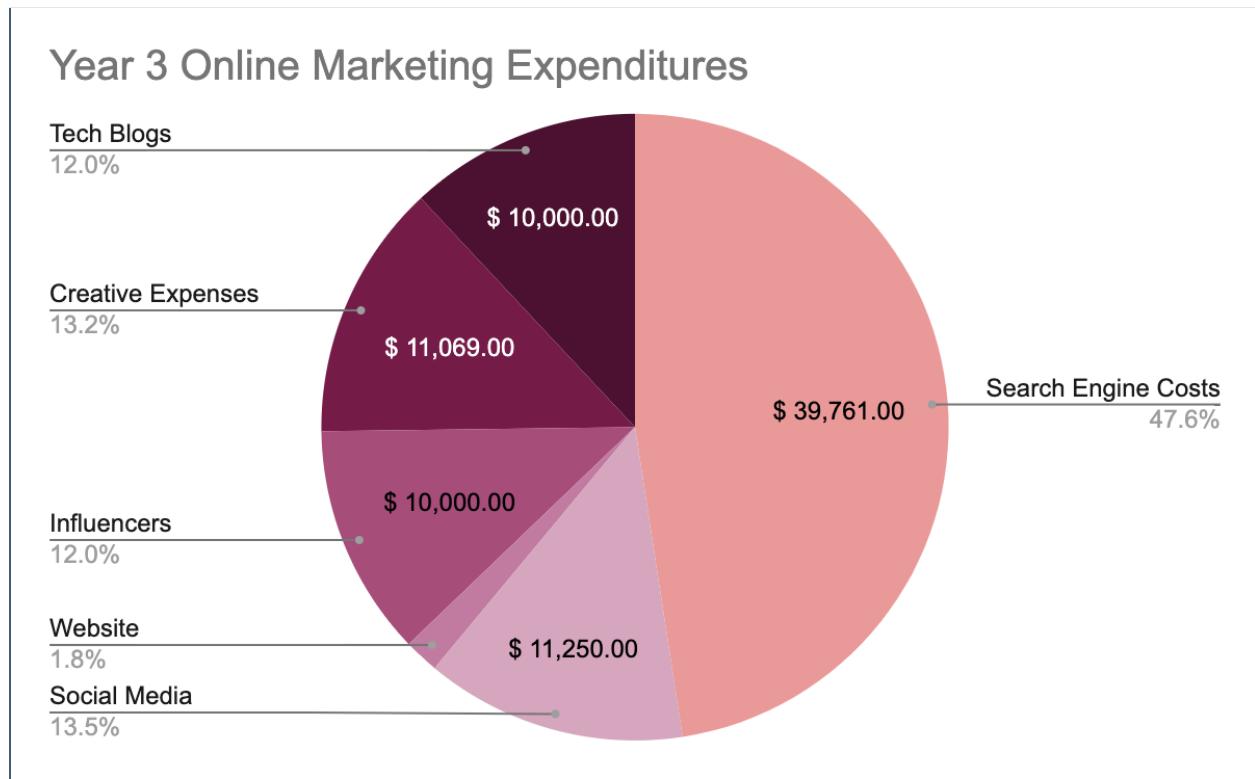
MK Appendix 9: Integrated Marketing Communications Schedule Year 5

Year 5 IMC Schedule		JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC	Total Cost	CPM	TOTAL Target Market Awareness
Segment Size: 17,419,369 households																
Changes: Online awareness increases by 1% / Word of Mouth applied / Carry Over applied / Magazine Ads applied (4 full page) / 1 less Trade Show																
PULL																
PAID																
Magazine Ads																
Healthy Pet (Full-page)																
Best Friends (Full Page)																
All Animals (Full-page)																
Family Dog (Full-page)																
Fairs/Events																
Pet Fair - Manchester, New Hampshire																
Kentucky State Fair - Louisville, Kentucky																
Dog Fair - Chester, Connecticut																
Ventura Street Fair - Ventura, California																
Bark in the Park - San Jose, California																
Comic Con - San Diego, California																
Comic Con - San Diego, California																
Seattle Mart Fall Show - Seattle, Washington																
Online (25% of total OF PULL)																
Creative Marketing Ideas: Hamster Ball in dog park																
Creative expenses @ 5% of total budget																
EARNED																
PR, Magazines and Blogs																
Magazines, Healthy Pet, Best Friends, All Animals, Family Dog																
Blogs: TechnoBank, DogTipper, iHeartDogs, Dog Milk, Tucker Bulldyn, Doug the Pug, Harlow and Sage, Loki the Wooflog																
Word of Mouth (WOM)																
Carry Over																
OWNED																
Social Media																
Own website																
CSR INITIATIVE																
CSR Initiative 1: \$1 to No Kill Shelters for Every Purchase																
TOTAL PULL																
PUSH																
Trade Shows																
Global Pet Expo - Orlando, Florida																
Super Zoo - Las Vegas, Nevada																
Atlanta Pet Fair & Conference - College Park, Georgia																
Trade Magazine Ads																
Pet Age (Full-page)																
TOTAL PUSH																
TOTAL IMC SCHEDULE																
IMC SCHEDULE EXPENSES AS % OF SALES																
3.17%																
\$348,794																

MK Appendix 10: IMC Online Marketing Expenses Year 1



MK Appendix 11: IMC Online Marketing Expenses Year 3



MK Appendix 12: PupPal Brand Extension Pitch

PupCall - Concept



PupCall Positioning Statement



DoggyDaycare - Concept



DoggyDaycare - Positioning Statement



PupCall



Just one call away!

COMING SOON



DoggyDaycare



Pricing: \$40-50 per day

Target Consumer: Existing PupPal customers that more-frequently travel (i.e. for business, for family obligations, etc.)

Category: Pet Grooming and Boarding

Differentiating Benefit: Utilize already-existing PupPal application to monitor your dog

DoggyDaycare - Print Advertisement



DoggyDaycare - Print Advertisement



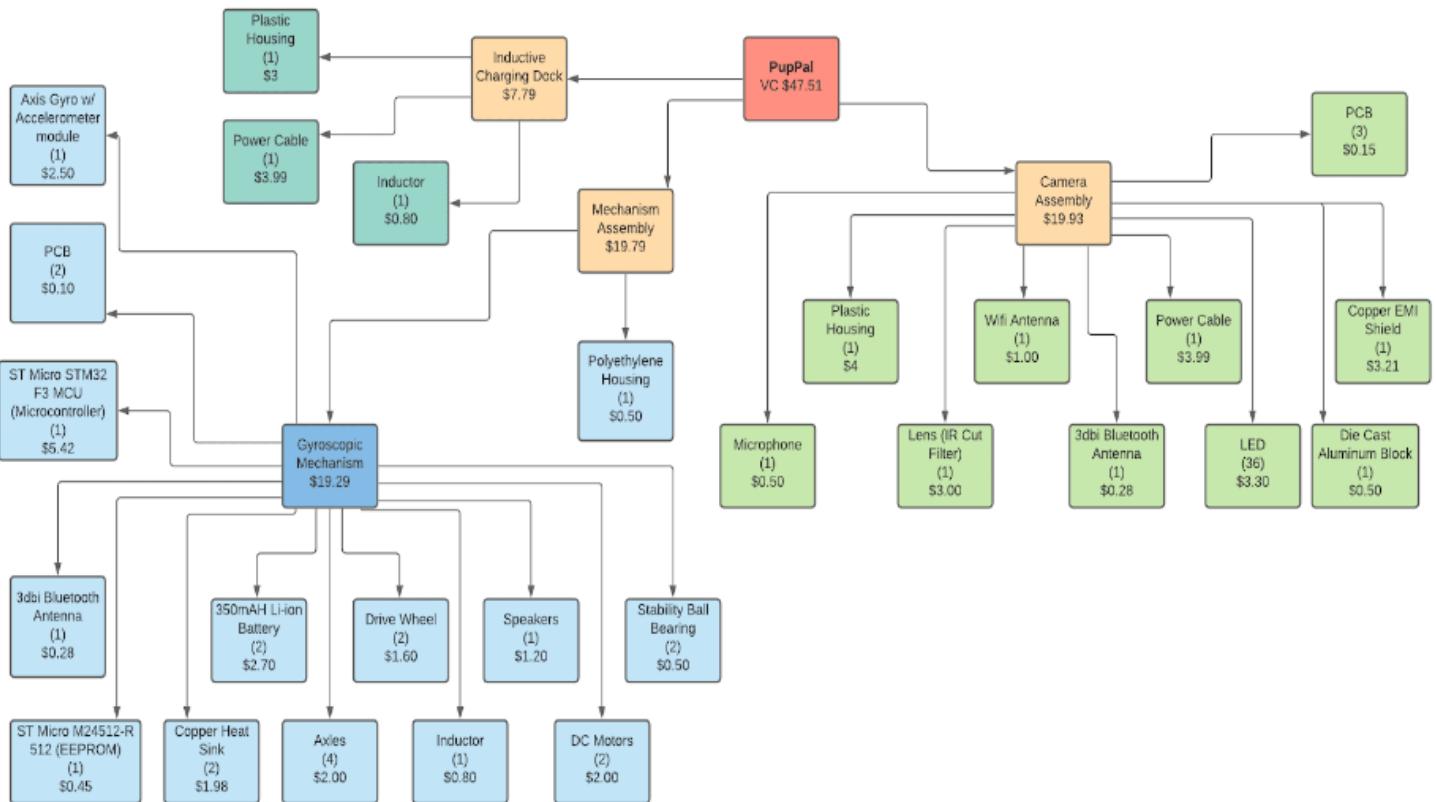
MK Appendix 13: PupPal Distribution Pricing Channel Years 1-5

Y1 Average Weighted	% Man Total Units	Manufacturing Selling Price	Retailer Margin	Retail Selling Price	Manufacturing Sales Total
Units into Independent Retailers	14%	\$ 180.00	50%	\$ 360.00	\$ 322,279.35
Units into Online (Amazon)	86%	\$ 167.04	40%	\$ 278.40	\$ 1,837,176.43
Average WEIGHTED Manufacturer's Selling Price to Channel	100%	\$ 168.85			\$ 2,159,455.78
Average WEIGHTED Retailer Selling Price				\$ 289.82	
Y2 Average Weighted	% Man Total Units	Manufacturing Selling Price	Retailer Margin	Retail Selling Price	Manufacturing Sales Total
Units into Independent Retailers	29%	\$ 180.00	50%	\$ 360.00	\$ 954,777.66
Units into Online (Amazon)	71%	\$ 167.04	40%	\$ 278.40	\$ 2,169,254.85
Average WEIGHTED Manufacturer's Selling Price to Channel	100%	\$ 170.80			\$ 3,124,032.51
Average WEIGHTED Retailer Selling Price				\$ 302.06	
Y3 Average Weighted	% Man Total Units	Manufacturing Selling Price	Retailer Margin	Retail Selling Price	Manufacturing Sales Total
Units into Independent Retailers	27%	\$ 180.00	50%	\$ 360.00	\$ 2,166,393.49
Units into Online (Amazon)	55%	\$ 167.04	40%	\$ 278.40	\$ 4,013,462.16
Units into Chains (PetCo & Chewy)	18%	\$ 153.12	45%	\$ 278.40	\$ 1,228,585.82
Average WEIGHTED Manufacturer's Selling Price to Channel	100%	\$ 168.04			\$ 7,408,441.47
Average WEIGHTED Retailer Selling Price				\$ 300.68	
Y4 Average Weighted	% Man Total Units	Manufacturing Selling Price	Retailer Margin	Retail Selling Price	Manufacturing Sales Total
Units into Independent Retailers	19%	\$ 180.00	50%	\$ 360.00	\$ 1,847,883.47
Units into Online (Amazon)	44%	\$ 167.04	40%	\$ 278.40	\$ 4,115,606.07
Units into Chains (PetCo & Chewy)	19%	\$ 153.12	45%	\$ 278.40	\$ 1,571,932.88
Units into Mass Merchants (Target)	19%	\$ 129.06	40%	\$ 215.10	\$ 1,324,932.45
Average WEIGHTED Manufacturer's Selling Price to Channel	100%	\$ 159.67			\$ 8,860,354.88
Average WEIGHTED Retailer Selling Price				\$ 281.51	
Y5 Average Weighted	% Man Total Units	Manufacturing Selling Price	Retailer Margin	Retail Selling Price	Manufacturing Sales Total
Units into Independent Retailers	12%	\$ 180.00	50%	\$ 360.00	\$ 1,541,896.05
Units into Online (Amazon)	36%	\$ 167.04	40%	\$ 278.40	\$ 4,292,638.61
Units into Chains (PetCo & Chewy)	22%	\$ 153.12	45%	\$ 278.40	\$ 2,404,672.55
Units into Mass Merchants (Target)	30%	\$ 129.06	40%	\$ 215.10	\$ 2,763,848.67
Average WEIGHTED Manufacturer's Selling Price to Channel	100%	\$ 154.14			\$ 11,003,055.88
Average WEIGHTED Retailer Selling Price				\$ 269.20	

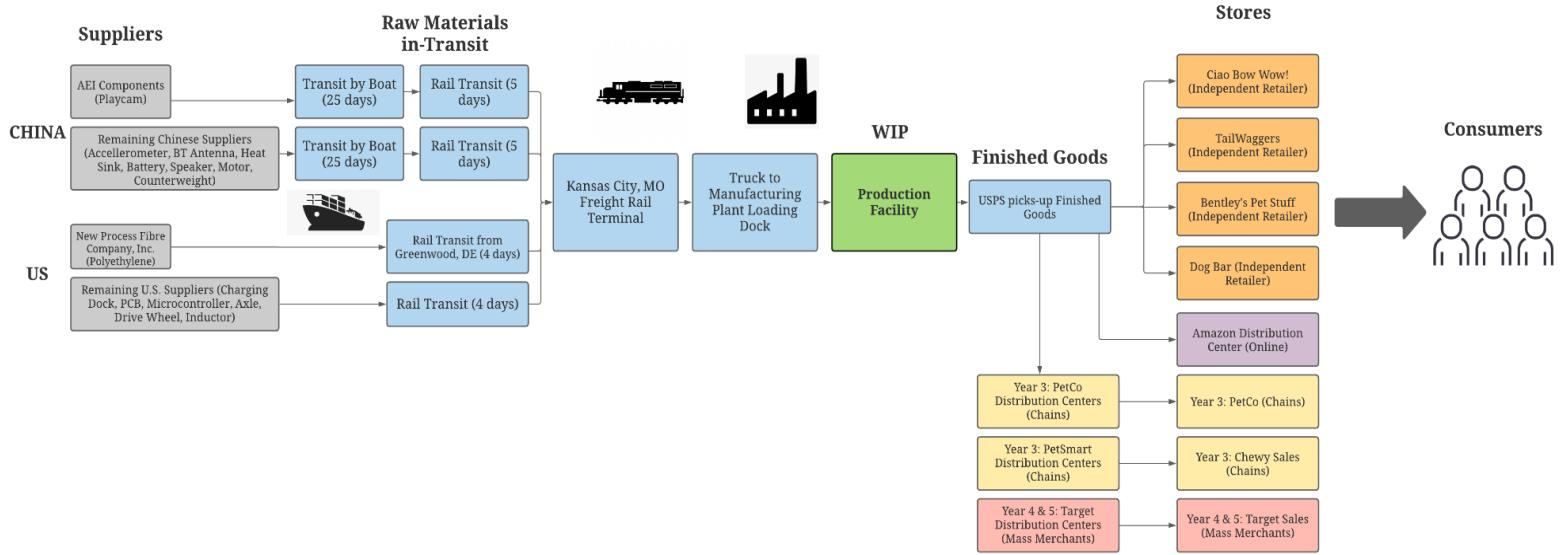
MK Appendix 14: Sales Projections Exhibit Healthy Growth

Year	1	2	3	4	5
Target Market Size (1.5% annual growth rate)	16,570,000	16,805,761	17,039,557	17,240,042	17,419,369
% increase rate of purchase intention	3%	3%	3%	3%	3%
ADJUSTED purchase intention @ \$300	7.28%	6.91%	6.95%	7.52%	7.89%
Awareness	7.58%	9.27%	21.15%	22.63%	24.20%
ACV	14%	17%	22%	27%	33%
Trial %	0.08%	0.11%	0.32%	0.46%	0.63%
Trial Units	12,789	18,291	55,108	79,274	109,822
Units at trial	1.0	1.0	1.0	1.0	1.0
Forecasted Units	12,789	18,291	55,108	79,274	109,822
Repeat Units	-	-	-	-	-
BASES Units (before competition)	12,789	18,291	55,108	79,274	109,822
Competition adjustment (units lost to competition)	0%	0%	20%	30%	35%
TOTAL UNITS	12,789	18,291	44,086	55,492	71,384
Average WEIGHTED manufacturing price	\$ 168.85	\$ 170.80	\$ 159.67	\$ 159.67	\$ 154.14
Manufacturer Sales (\$)	\$ 2,159,456	\$ 3,124,033	\$ 7,039,194	\$ 8,860,355	\$ 11,003,056
Average WEIGHTED retail price	\$ 289.82	\$ 302.06	\$ 300.68	\$ 281.51	\$ 269.20
Retail Revenue (\$)	\$ 3,706,519	\$ 5,524,980	\$ 13,255,683	\$ 15,621,391	\$ 19,216,736

OM Appendix 1: PupPal Bill of Materials



OM Appendix 2: PupPal Supply Chain



OM Appendix 3: Center of Gravity Analysis for Location Planning

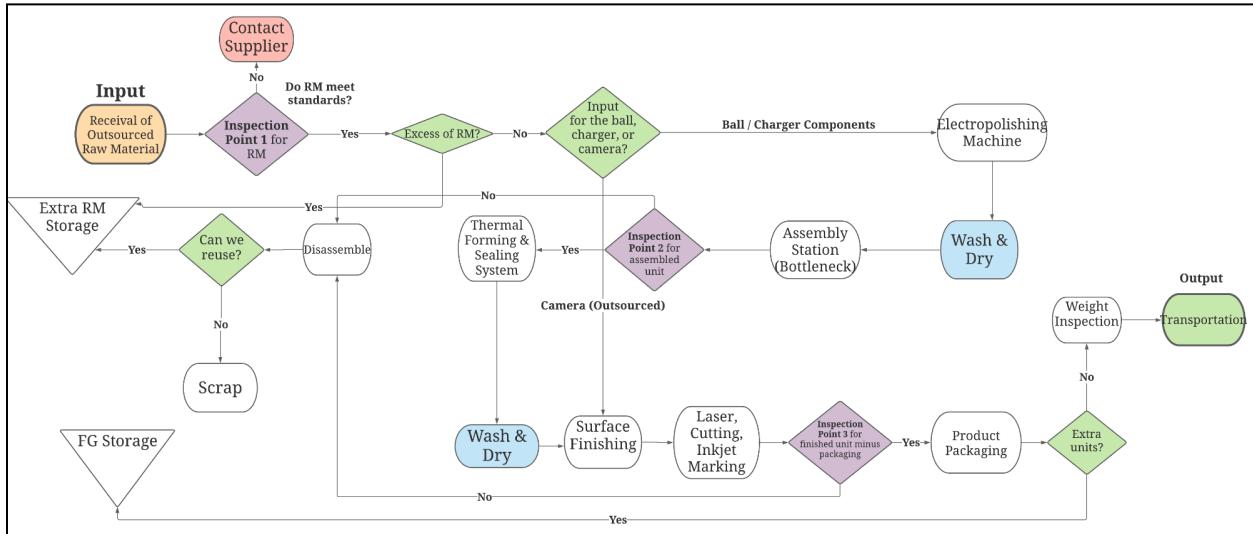
Center of Gravity Method							
		Store Location	Y Co-ordinate (Latitude)	X Co-ordinate (Longitude)	Total Units/Channel	Qty of Product	
Online	Amazon	Tennessee	40.741895	-73.989308	98,349	32,783	
		California	35.44865	-119.096146		32,783	
		Kentucky	39.057207	-84.638505		32,783	
Independent Retailers	Ciao Bow Wow	New York	40.70965	-74.009303	37,962	4,218	
		New York	40.686234	-73.983047		4,218	
		Massachusetts	42.725319	-71.112015		4,218	
	TailWaggers	Illinois	40.054403	-88.25041		4,218	
		New York	41.076256	-73.858302		4,218	
		California	34.0884	-118.361394		4,218	
Chains	Bentley's Pet Stuff	Illinois	41.887893	-87.644377		4,218	
		Colorado	38.895466	-104.729347		4,218	
		Florida	27.770937	-82.66457		4,218	
		Petsmart	40.989145	-75.232659	33,994	8,499	
	PetSmart	Vermont	44.444988	-73.1172		8,499	
		New York	40.742527	-73.989212		8,499	
Mass Merchants	Target	Connecticut	41.804752	-72.56012		8,499	
		Texas	33.2016067	-97.1793652	31,681	7,920	
		California	38.684498	-121.742455		7,920	
		New York	42.921668	-74.17534		7,920	
	Target	Ohio	39.565082	-82.48803		7,920	
Camera Supplier	AEI Components	California	33.868094	-118.100943	202,042	202,042	
Polyethylene Supplier	New Process Fibre	Delaware	38.81419	-75.59149	202,042	202,042	
Parts Supplier Ports	Los Angeles	Los Angeles	33.738235	-118.281364	202,042	101,021	
		New York	40.68166	-74.00489		101,021	
			37.24569825	-94.55597644			
Manufacturing Facility Location Should be Near:			27705 Maple Road, Jasper County, MO 64834				
Closest Major City:			Kansas City, MO				

OM Appendix 4: Factor Rating Analysis for Location Planning

Factor Rating Method						
Factor Rating Method	Weight	Columbus, IN	Kansas City, MO	San Jose, CA	Reno, NV	Rocky Mount, NC
Labor Costs	53%	100%	100%	56%	92%	100%
Proximity to Suppliers	20%	99%	100%	86%	90%	93%
Facility Costs	47%	88%	85%	27%	73%	100%
Distribution Cost	7%	70%	100%	16%	32%	30%
		1.19050485	1.195354975	0.605675647	1.032437403	1.205964896
Weighted Scores		99%	99%	50%	86%	100%

Calculations for Factor Rating						
Min Wage		7.25	7.25	13	8.25	7.25
		0.442307692	0.442307692	0	0.365384615	0.442307692
		100%	100%	56%	92%	100%
Proximity to Supplier (Miles)						
LA		2109	1618	340	471	2599
New York		742	1210	2935	2689	461
Average Proximity to Supplier		1425.5	1414	1637.5	1580	1530
		0.129465649	0.13648855	0	0.035114504	0.065648855
		99%	100%	86%	90%	93%
Average Rent		970	1061	2526	1365	675
		0.615993666	0.579968329	0	0.459619952	0.732779097
		88%	85%	27%	73%	100%
Distance from Center of the Country		749	261	1606	1356	1382
		0.53362391	0.837484433	0	0.155666252	0.139476961
		70%	100%	16%	32%	30%

OM Appendix 5: Process Flow Diagram



OM Appendix 6: Total Average Monthly Order Quantity

	Total Units Required Monthly												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Annual Output
Year 0 Monthly Output										640	640	1,120	2,400
Year 1 Monthly Output	640	640	640	1,120	1,120	1,120	1,120	1,120	1,120	1,120	1,120	1,120	12,000
Year 2 Monthly Output	1,280	1,280	1,280	1,760	1,760	1,760	1,760	1,760	1,760	1,760	1,760	1,760	19,680
Year 3 Monthly Output	3,680	3,680	3,680	3,680	3,680	3,680	3,680	3,680	3,680	3,680	3,680	3,680	44,160
Year 4 Monthly Output	4,320	4,320	4,320	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	4,800	56,160
Year 5 Monthly Output	5,920	5,920	5,920	5,920	5,920	5,920	5,920	5,920	5,920	5,920	5,920	5,920	71,040
Total Average Monthly Order Quantity/Max Order Quantity	15,840	#####	15,840	17,280	17,280	17,280	17,280	17,280	17,280	17,280	17,280	17,280	
	92%	92%	92%	100%	100%	100%	100%	100%	100%	100%	100%	100%	

OM Appendix 7: Average Unit Outbound Freight Costs by Channel Exhibit Low Variation

Distribution Centers	Channel Partner	Location of DC	Zip Code	USPS Zone	Shipping Cost/Unit (From Kansas City Missouri)	Shipping Cost per Unit with Bulk Discount via USPS	Discount Rate	Average per Channel
Online	Amazon	Tennessee	37010	East	\$ 11.10	\$ 1.22	89.00%	\$ 1.30
		California	90011	West	\$ 13.30	\$ 1.46		
		Kentucky	40003	East	\$ 11.10	\$ 1.22		
Independent Retailers	Ciao Bow Wow!	New York	10001	East	\$ 13.30	\$ 1.46		\$ 1.40
		New York	10001	East	\$ 13.30	\$ 1.46		
		Massachusetts	1001	East	\$ 13.30	\$ 1.46		
	TailWaggers	Massachusetts	1001	East	\$ 13.30	\$ 1.46		
		Illinois	60007	East	\$ 11.10	\$ 1.22		
		New York	10001	East	\$ 13.30	\$ 1.46		
		California	90011	West	\$ 13.30	\$ 1.46		
	Bentley's Pet Stu	Chicago	60007	East	\$ 11.10	\$ 1.22		
		Colorado	80011	West	\$ 11.10	\$ 1.22		
		Massachusetts	1001	East	\$ 13.30	\$ 1.46		
	Dog Bar	Florida	33101	East	\$ 13.30	\$ 1.46		
Chains	Petsmart	Pennsylvania	15014	East	\$ 12.60	\$ 1.39		\$ 1.44
		Vermont	5001	East	\$ 13.30	\$ 1.46		
		New York	10001	East	\$ 13.30	\$ 1.46		
		Connecticut	6001	East	\$ 13.30	\$ 1.46		
Mass Merchants	Target	Texas	75006	West	\$ 11.10	\$ 1.22		\$ 1.38
		California	90011	West	\$ 13.30	\$ 1.46		
		New York	10001	East	\$ 13.30	\$ 1.46		
		Ohio	43001	East	\$ 12.60	\$ 1.39		

OM Appendix 8: PupPal Staffing Labor Costs & Benefits

Labor Costs	YEAR 0	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Plant Manager	\$ 13,333.33	\$ 80,000.00	\$ 82,400.00	\$ 84,872.00	\$ 87,418.16	\$ 90,040.70
Floor Manager				\$ 43,000.00	\$ 44,290.00	\$ 45,618.70
Quality Assurance Manager				\$ 82,000.00	\$ 84,460.00	\$ 86,993.80
FULL-Time Assembly Workers (1,1,2,5,6,7)	\$ 6,240.00	\$ 24,960.00	\$ 49,920.00	\$ 124,800.00	\$ 149,760.00	\$ 174,720.00
PART-Time Assembly Workers		\$ 11,124.00	\$ 11,124.00	\$ 14,832.00	\$ 25,956.00	\$ 44,496.00
FULL-Time Manufacturing Workers (x8)	\$ 9,013.33	\$ 216,320.00	\$ 222,809.60	\$ 229,493.89	\$ 236,378.70	\$ 243,470.07
CEO	\$ 27,500.00	\$ 110,000.00	\$ 113,300.00	\$ 116,699.00	\$ 120,199.97	\$ 123,805.97
Accounting Clerk	\$ 11,250.00	\$ 45,000.00	\$ 46,350.00	\$ 47,740.50	\$ 49,172.72	\$ 50,647.90
Customer Service Team (2 in yr 1-2, 4 in yr 3-5)		\$ 70,200.00	\$ 72,306.00	\$ 74,475.18	\$ 76,709.44	\$ 79,010.72
Mechanical Engineer	\$ 22,000.00	\$ 88,000.00	\$ 90,640.00	\$ 93,359.20	\$ 96,159.98	\$ 99,044.78
CFO/Financial Manager				\$ 93,000.00	\$ 95,790.00	\$ 98,663.70
COO/Operating Manager	\$ 23,250.00	\$ 93,000.00	\$ 95,790.00	\$ 98,663.70	\$ 101,623.61	\$ 104,672.32
CMO/Marketing Manager				\$ 93,000.00	\$ 95,790.00	\$ 98,663.70
Total	\$ 112,586.67	\$ 738,604.00	\$ 784,639.60	\$ 1,195,935.47	\$ 1,263,708.57	\$ 1,339,848.35
Benefits	Year 0	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Plant Manager	\$ 4,000.00	\$ 24,000.00	\$ 24,720.00	\$ 25,461.60	\$ 26,225.45	\$ 27,012.21
Floor Manager				\$ 12,900.00	\$ 13,287.00	\$ 13,685.61
Quality Assurance Manager				\$ 24,600.00	\$ 25,338.00	\$ 26,098.14
FULL-Time Assembly Workers (1,1,2,5,6,7)	\$ 1,872.00	\$ 7,488.00	\$ 14,976.00	\$ 37,440.00	\$ 44,928.00	\$ 52,416.00
FULL-Time Manufacturing Workers (x8)	\$ 2,704.00	\$ 64,896.00	\$ 66,842.88	\$ 68,848.17	\$ 70,913.61	\$ 73,041.02
CEO	\$ 8,250.00	\$ 33,000.00	\$ 33,990.00	\$ 35,009.70	\$ 36,059.99	\$ 37,141.79
Mechanical Engineer	\$ 6,600.00	\$ 26,400.00	\$ 27,192.00	\$ 28,007.76	\$ 28,847.99	\$ 29,713.43
Customer Service Team (2 in yr 1-2, 4 in yr 3-5)		\$ 21,060.00	\$ 21,691.80	\$ 22,342.55	\$ 23,012.83	\$ 23,703.22
Accounting Clerk	\$ 3,375.00	\$ 13,500.00	\$ 13,905.00	\$ 14,322.15	\$ 14,751.81	\$ 15,194.37
CFO/Financial Manager				\$ 27,900.00	\$ 28,737.00	\$ 29,599.11
COO/Operating Manager	\$ 6,975.00	\$ 27,900.00	\$ 28,737.00	\$ 29,599.11	\$ 30,487.08	\$ 31,401.70
CMO/Marketing Manager				\$ 27,900.00	\$ 28,737.00	\$ 29,599.11
Total	\$ 33,776.00	\$ 218,244.00	\$ 232,054.68	\$ 354,331.04	\$ 371,325.77	\$ 388,605.70
Total Salaries + Benefits	\$ 146,362.67	\$ 956,848.00	\$ 1,016,694.28	\$ 1,550,266.51	\$ 1,635,034.34	\$ 1,728,454.05

OM Appendix 9: Hybrid Aggregate Plan Year 0

Hybrid Plan Year 0	Expected Monthly Demand %													1,583
Period		1	2	3	4	5	6	7	8	9	10	11	12	Total (Yield = 82%)
Forecast Output		-	-	-	-	-	-	-	-	-	522	522	522	1,583
Regular											640	640	640	1,574
Overtime		-	-	-	-	-	-	-	-	-	-	-	-	-
Part Time		-	-	-	-	-	-	-	-	-	-	-	-	394
Subcontract		-	-	-	-	-	-	-	-	-	-	-	-	-
Output - Forecast		-	-	-	-	-	-	-	-	-	118			97
Inventory Beginning		-	-	-	-	-	-	-	-	-	-	118	118	
Ending	-	-	-	-	-	-	-	-	-	-	118	118	118	97
Average		-	-	-	-	-	-	-	-	-	59	118	118	20
Backorders		-	-	-	-	-	-	-	-	-	-	-	-	-
Costs per unit:														
Regular @ \$ 3.25		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,080	\$ 2,080	\$ 2,080	\$ 6,240
Overtime @ \$ 4.88		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Part Time @ \$ 2.58		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,236
Subcontract @		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Inventory @ \$ 0.33		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 19	\$ 208	\$ 208	\$ 435
Backorders @		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,099	\$ 2,288	\$ 3,524	\$ 7,911
Total Part-Time Workers														1

OM Appendix 10: Hybrid Aggregate Plan Year 1

Capacity Year 1	
cycle time	4 balls per hour
full-time	1 workers
working Hour	8 hr
working days per month	20
monthly Full time capacity	640 per worker
total monthly full time capacity	640 units per month
Max part time	1 workers
working Hour	6 hr
working days per month	20
monthly part time capacity	480 per worker
total monthly part time capacity	480 units per month

Hybrid Plan Year 1	Expected Monthly Demand %													100.00%
		6.99%	5.39%	7.58%	6.19%	6.79%	7.39%	7.78%	7.78%	7.58%	8.38%	13.77%	14.37%	
Period		1	2	3	4	5	6	7	8	9	10	11	12	Total (Yield = 87%)
Forecast		893	689	970	791	868	944	996	996	970	1,072	1,761	1,838	12,789
Output														
Regular		640	640	640	640	640	640	640	640	640	640	640	640	6,682
Overtime		-	-	-	-	-	-	-	-	-	-	-	-	-
Part Time		-	-	-	-	480	480	480	480	480	480	480	480	3,758
Subcontract		-	-	-	-	-	-	-	-	-	-	-	-	-
Output - Forecast		(253)	(49)	(330)	329	252	176	124	124	150	48	(641)	(718)	(686)
Inventory														
Beginning		1,968	1,715	1,665	1,335	1,664	1,916	2,092	2,216	2,341	2,491	2,538	1,897	
Ending	1,968	1,715	1,665	1,335	1,664	1,916	2,092	2,216	2,341	2,491	2,538	1,897	1,179	1,026
Average		1,841	1,690	1,500	1,500	1,790	2,004	2,154	2,278	2,416	2,514	2,218	1,538	1,700
Backorders		-	-	-	-	-	-	-	-	-	-	-	-	-
Costs:														
Regular @	\$ 3.25	\$ 2,080	\$ 2,080	\$ 2,080	\$ 2,080	\$ 2,080	\$ 2,080	\$ 2,080	\$ 2,080	\$ 2,080	\$ 2,080	\$ 2,080	\$ 2,080	\$ 24,960
Overtime @	\$ 4.88	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Part Time @	\$ 2.58	\$ -	\$ -	\$ -	\$ -	\$ 1,236	\$ 1,236	\$ 1,236	\$ 1,236	\$ 1,236	\$ 1,236	\$ 1,236	\$ 1,236	\$ 11,124
Subcontract @		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Inventory @	\$ 0.33	\$ 598	\$ 549	\$ 488	\$ 487	\$ 582	\$ 651	\$ 700	\$ 740	\$ 785	\$ 817	\$ 721	\$ 500	\$ 7,619
Backorders @		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total		\$ 2,678	\$ 2,629	\$ 2,568	\$ 3,803	\$ 3,898	\$ 3,967	\$ 4,016	\$ 4,056	\$ 4,101	\$ 4,133	\$ 4,037	\$ 3,816	\$ 43,703
Total Part-Time Workers					1	1	1	1	1	1	1	1	1	

*Note: Our year 0 and 1 assumptions for capacity are the same.

OM Appendix 11: Hybrid Aggregate Plan Year 5

Capacity Year 5	
cycle time	4 balls per hour
full-time	7 workers
working Hour	8 hr
working days per month	20
monthly Full time capacity	640 per worker
total monthly full time capacity	4480 units per month
Max part time	3 workers
working Hour	6 hr
working days per month	20
monthly part time capacity	480 per worker
total monthly part time capacity	1440 units per month

Hybrid Plan Year 5	Expected Monthly Demand %	348	207	411	273	329	389	433	433	411	502	1354	1474	6564
		6.99%	5.39%	7.58%	6.19%	6.79%	7.39%	7.78%	7.78%	7.58%	8.38%	13.77%	14.37%	100.00%
Period		1	2	3	4	5	6	7	8	9	10	11	12	Total (Yield = 98%)
Forecast Output		4,987	3,847	5,414	4,417	4,844	5,272	5,557	5,557	5,414	5,984	9,831	10,259	71,384
Regular Overtime		4,480	4,480	4,480	4,480	4,480	4,480	4,480	4,480	4,480	4,480	4,480	4,480	52,685
Part Time		-	-	-	-	-	-	-	-	-	-	-	-	-
Subcontract		1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	16,934
Output - Forecast		933	2,073	506	1,503	1,076	648	363	363	506	(64)	(3,911)	(4,339)	(337)
Inventory														
Beginning		2,808	3,741	5,814	6,320	7,823	8,899	9,547	9,910	10,273	10,779	10,714	6,803	
Ending	2,808	3,741	5,814	6,320	7,823	8,899	9,547	9,910	10,273	10,779	10,714	6,803	2,464	2,415
Average		3,275	4,778	6,067	7,071	8,361	9,223	9,728	10,091	10,526	10,746	8,759	4,634	7,616
Backorders		-	-	-	-	-	-	-	-	-	-	-	-	-
Costs:														
Regular @	\$ 3.25	\$ 14,560	\$ 14,560	\$ 14,560	\$ 14,560	\$ 14,560	\$ 14,560	\$ 14,560	\$ 14,560	\$ 14,560	\$ 14,560	\$ 14,560	\$ 14,560	\$ 174,720
Overtime @	\$ 4.88	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Part Time @	\$ 2.58	\$ 3,708	\$ 3,708	\$ 3,708	\$ 3,708	\$ 3,708	\$ 3,708	\$ 3,708	\$ 3,708	\$ 3,708	\$ 3,708	\$ 3,708	\$ 3,708	\$ 44,496
Subcontract @		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Inventory @	\$ 0.33	\$ 1,064	\$ 1,553	\$ 1,972	\$ 2,298	\$ 2,717	\$ 2,997	\$ 3,162	\$ 3,280	\$ 3,421	\$ 3,493	\$ 2,847	\$ 1,506	\$ 30,309
Backorders @		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Hire/Lay off														
Total		\$ 19,332	\$ 19,821	\$ 20,240	\$ 20,566	\$ 20,985	\$ 21,265	\$ 21,430	\$ 21,548	\$ 21,689	\$ 21,761	\$ 21,115	\$ 19,774	\$ 249,525
Total Part-Time Workers		3	3	3	3	3	3	3	3	3	3	3	3	

FE Appendix 1: PupPal Income Statement

Base Case Income Statement (In US Dollars)	Start-up	Year 1	Year 2	Year 3	Year 4	Year 5
TOTAL REVENUES	\$ -	\$ 2,159,456	\$ 3,124,033	\$ 7,408,441	\$ 8,860,355	\$ 11,003,056
Variable Costs	\$ (113,329)	\$ (870,842)	\$ (1,317,793)	\$ (2,484,755)	\$ (3,023,260)	\$ (3,669,319)
Fixed Production Costs (allocated Manufacturing overhead)	\$ (52,208)	\$ (256,050)	\$ (262,602)	\$ (431,851)	\$ (443,677)	\$ (455,857)
Year 0 Cost of Goods Manufactured	\$ (165,537)	\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL COST OF GOODS SOLD	\$ -	\$ (1,126,892)	\$ (1,580,395)	\$ (2,916,606)	\$ (3,466,937)	\$ (4,125,176)
GROSS PROFIT	\$ -	\$ 1,032,564	\$ 1,543,637	\$ 4,491,836	\$ 5,393,418	\$ 6,877,879
Year 0 Net Operating Expenses	\$ (165,537)	\$ -	\$ -	\$ -	\$ -	\$ -
One-time Start Up Expenses	\$ (571,965)	\$ -	\$ -	\$ -	\$ -	\$ -
Administrative Overhead (salaries)	\$ -	\$ (413,660)	\$ (426,070)	\$ (680,652)	\$ (701,071)	\$ (722,104)
General operating expenses not already part of COGS	\$ -	\$ (141,792)	\$ (141,792)	\$ (190,782)	\$ (172,032)	\$ (172,032)
Marketing Expenses Excluding Mfg Reps Commissions	\$ -	\$ (172,760)	\$ (169,762)	\$ (330,746)	\$ (333,687)	\$ (348,794)
Manufacturer's Sales Reps Commission Expense (10%)	\$ -	\$ (32,228)	\$ (95,478)	\$ (339,498)	\$ (474,475)	\$ (671,042)
Depreciation on original PP&E	\$ -	\$ (74,410)	\$ (74,410)	\$ (74,410)	\$ (71,577)	\$ (71,577)
Depreciation on new PP&E (purchased after start-up)	\$ -	\$ -	\$ -	\$ -	\$ (6,035)	\$ (6,035)
Earnings Before Tax	\$ (737,503)	\$ 197,714	\$ 636,126	\$ 2,875,748	\$ 3,634,541	\$ 4,886,297
Taxes	\$ -	\$ 53,383	\$ 171,754	\$ 776,452	\$ 981,326	\$ 1,319,300
NET INCOME	\$ (737,503)	\$ 144,331	\$ 464,372	\$ 2,099,296	\$ 2,653,215	\$ 3,566,997

FE Appendix 2: PupPal Balance Sheet

Base Case Balance Sheet (In US Dollars)	Time 0	Year 1	Year 2	Year 3	Year 4	Year 5
Current Assets						
Cash reserves	\$ -	\$ 107,972.79	\$ 156,201.63	\$ 300,000	\$ 300,000	\$ 300,000
Accounts Receivable	\$ -	\$ 62,712.96	\$ 142,079.29	\$ 447,422.77	\$ 660,157.13	\$ 922,447.97
Raw Materials and WIP	\$ 15,279.91	\$ 96,116.85	\$ 143,692.17	\$ 317,935.27	\$ 390,548.90	\$ 485,381.54
Finished Goods Inventory	\$ 13,788.11	\$ 85,264.05	\$ 108,951.25	\$ 223,119.65	\$ 266,162.78	\$ 322,462.44
Current Assets	\$ 29,068.02	\$ 352,066.64	\$ 550,924.33	\$ 1,288,477.68	\$ 1,616,868.81	\$ 2,030,291.95
Fixed Assets						
Gross Fixed Assets	\$ 366,383.26	\$ 366,383.26	\$ 366,383.26	\$ 385,651.26	\$ 385,651.26	\$ 385,651.26
Accumulated Depreciation	\$ -	\$ (74,409.99)	\$ (148,819.97)	\$ (223,229.96)	\$ (300,841.39)	\$ (378,452.82)
Net Fixed Assets	\$ 366,383.26	\$ 291,973.27	\$ 217,563.29	\$ 162,421.30	\$ 84,809.87	\$ 7,198.44
TOTAL ASSETS	\$ 395,451.28	\$ 644,039.92	\$ 768,487.62	\$ 1,450,898.98	\$ 1,701,678.68	\$ 2,037,490.39
Current Liabilities						
Accounts Payable	\$ 4,269.39	\$ 21,969.14	\$ 38,514.18	\$ 80,932.67	\$ 100,452.02	\$ 123,846.52
Current Liabilities	\$ 4,269.39	\$ 21,969.14	\$ 38,514.18	\$ 80,932.67	\$ 100,452.02	\$ 123,846.52
Equity						
Paid in Capital (Cumulative)	\$ 1,128,684.50	\$ 1,215,242.33	\$ 1,215,242.33	\$ 1,215,242.33	\$ 1,215,242.33	\$ 1,215,242.33
Retained Earnings (cumulative)	\$ (737,502.61)	\$ (593,171.55)	\$ (485,268.89)	\$ 154,723.98	\$ 385,984.33	\$ 698,401.54
Total Equity	\$ 391,181.89	\$ 622,070.77	\$ 729,973.43	\$ 1,369,966.31	\$ 1,601,226.66	\$ 1,913,643.87
TOTAL LIABILITIES AND EQUITY	\$ 395,451.28	\$ 644,039.92	\$ 768,487.62	\$ 1,450,898.98	\$ 1,701,678.68	\$ 2,037,490.39
Check Total Assets - Total Liabilities & Equity	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

FE Appendix 3: PupPal Statement of Retained Earnings

Statement of Retained Earnings							
Retained earnings at start of period	\$ -	\$ (737,503)	\$ (593,172)	\$ (485,269)	\$ 154,724	\$ 385,984	
Net Income	\$ (737,503)	\$ 144,331	\$ 464,372	\$ 2,099,296	\$ 2,653,215	\$ 3,566,997	
minus cash returned to investors (dividends)	\$ -	\$ -	\$ (356,469)	\$ (1,459,303)	\$ (2,421,955)	\$ (3,254,579)	
Increase (Decrease) in Retained Earnings	\$ (737,503)	\$ (593,172)	\$ (485,269)	\$ 154,724	\$ 385,984	\$ 698,402	

FE Appendix 4: PupPal Statement of Cash Flows

Base Case Statement of Cash Flow (In US Dollars)	Start-up	Year 1	Year 2	Year 3	Year 4	Year 5
Initial Investment in Fixed Assets	\$ (366,383)					
Net Income	\$ (737,503)	\$ 144,331	\$ 464,372	\$ 2,099,296	\$ 2,653,215	\$ 3,566,997
+ Depreciation	\$ -	\$ 74,410	\$ 74,410	\$ 74,410	\$ 77,611	\$ 77,611
+/- Change in Net Working Capital	\$ (24,799)	\$ (305,299)	\$ (182,313)	\$ (726,372)	\$ (277,634)	\$ (390,029)
- Change in Fixed Assets	\$ -	\$ -	\$ -	\$ (19,268)	\$ -	\$ -
Net Free Cash Flow	\$ (1,128,685)	\$ (86,558)	\$ 356,469	\$ 1,428,066	\$ 2,453,192	\$ 3,254,579
Terminal Value of Business						\$ 3,926,599
Total Cash Flow	\$ (1,495,068)	\$ (86,558)	\$ 356,469	\$ 1,428,066	\$ 2,453,192	\$ 7,181,178
CASH NEEDED	\$ 1,581,625.59					
Net Present Value: Including TV	\$ 2,719,365					
Internal Rate of Return: Including TV	59.95%					

FE Appendix 5: PupPal Finance Receivables & Payables

Receivables	Y0	Y1	Y2	Y3	Y4	Y5
Not Online %	0.00%	14%	29%	46%	56%	64%
Online %	0.00%	86%	71%	55%	44%	36%
	Y0	Y1	Y2	Y3	Y4	Y5
Not Online A/R	\$ -	\$ 37,273	\$ 111,695	\$ 415,583	\$ 606,267	\$ 868,186
Online A/R	\$ -	\$ 25,440	\$ 30,384	\$ 55,310	\$ 53,890	\$ 54,262
Total A/R	\$ -	\$ 62,713	\$ 142,079	\$ 470,893	\$ 660,157	\$ 922,448

Payables	Y0	Y1	Y2	Y3	Y4	Y5
US%	\$ 1	\$ 1	\$ 1	\$ 1	\$ 1	\$ 1
CHINA%	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
US A/P	\$ 4,269	\$ 21,969	\$ 38,514	\$ 80,933	\$ 100,452	\$ 123,847
CHINA A/P	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total A/P	\$ 4,269	\$ 21,969	\$ 38,514	\$ 80,933	\$ 100,452	\$ 123,847

FE Appendix 6: PupPal Product Life Cycle Growth

	FORECAST		G
Introduction	Y0	\$ (1,128,684.50)	0.00%
	Y1	\$ (86,557.83)	92.33%
Growth	Y2	\$ 356,469.25	511.83%
	Y3	\$ 1,428,065.50	300.61%
Maturity	Y4	\$ 2,453,192.43	71.78%
	Y5	\$ 3,254,579.32	32.67%
Decline	Y6	\$ 2,929,121.39	-10.00%
	Y7	\$ 2,489,753.18	-15.00%

FE Appendix 7: PupPal Capital Asset Pricing Model (CAPM)

CAPM	
10 Year T-bill Yield	1.68%
β	1.43
S&P Average 10 Year Return	10%
Equity Cost of Capital (Before Small Business Premium)	14%
Small Business Premium	11.65%
Equity Cost of Capital	25%

FE Appendix 8: PupPal Depreciation Schedule

IS Equipment	Y0	Y1	Y2	Y3	Y4	Y5
Laptops	\$ 4,500	\$ -	\$ -	\$ 10,500	\$ -	\$ -
Desktops	\$ 4,000	\$ -	\$ -	\$ 6,000	\$ -	\$ -
High speed printer	\$ 750	\$ -	\$ -	\$ 750	\$ -	\$ -
Photocopier	\$ 1,500	\$ -	\$ -	\$ 1,500	\$ -	\$ -
Networking Equipment	\$ 350	\$ -	\$ -	\$ -	\$ -	\$ -

Machines	Y0	Y1	Y2	Y3	Y4	Y5
Mfg Machines	\$ 75,283	\$ -	\$ -	\$ -	\$ -	\$ -
Forklifts x 2	\$ 70,000	\$ -	\$ -	\$ -	\$ -	\$ -
Semi trucks x 2	\$ 210,000	\$ -	\$ -	\$ -	\$ -	\$ -
Add equip for metal workers	\$ -	\$ -	\$ -	\$ 518	\$ -	\$ -
Total CAPEX	\$ 366,383	\$ -	\$ -	\$ 19,268	\$ -	\$ -
Gross Capital	\$ 366,383	\$ 366,383	\$ 366,383	\$ 385,651	\$ 385,651	\$ 385,651

Depreciation Schedule

Depreciation of New PPE	Y0	Y1	Y2	Y3	Y4	Y5	Y6
Laptops	\$ -	\$ -	\$ -	\$ 10,500	\$ 7,000	\$ 3,500	\$ -
Desktops	\$ -	\$ -	\$ -	\$ 6,000	\$ 4,000	\$ 2,000	\$ -
High speed printer	\$ -	\$ -	\$ -	\$ 750	\$ 600	\$ 450	\$ 300
Photocopier	\$ -	\$ -	\$ -	\$ 1,500	\$ 1,200	\$ 900	\$ 600
Networking Equipment	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Mfg Machines	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Forklifts x 2	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Semi trucks x 2	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Add equip for metal workers	\$ -	\$ -	\$ -	\$ 424	\$ 339	\$ 254	\$ 170
Value	\$ -	\$ -	\$ -	\$ 19,174	\$ 13,139	\$ 7,104	\$ 1,070
Depreciation (Y3 items)	\$ -	\$ -	\$ -	\$ -	\$ 6,035	\$ 6,035	\$ 6,035

	Y0	Y1	Y2	Y3	Y4	Y5
Total Depreciation	\$ -	\$ 74,410	\$ 74,410	\$ 74,410	\$ 77,611	\$ 77,611

FE Appendix 9: PupPal Book Value Assets At Year 5

Laptops	\$ 3,500
Desktops	\$ 2,000
High speed printer	\$ 450
Photocopier	\$ 900
Networking Equipment	\$ -
Mfg Machines	\$ -
Forklifts x 2	\$ -
Semi trucks x 2	\$ -
Add equip for metal workers	\$ 254
TOTAL	\$ 7,104

QM Appendix 1: Simulation 1 (Segment Size) Standard Deviation Calculations

Determining Standard Deviation for Simulation			
Min	Base	Max	Assumptions
90%	100%	110%	Number of dog owning households in the US can vary by 10%
52%	57%	62%	% of Millenial & Gen X dog owners can vary by 5%
69%	74%	79%	% of owners of Medium & Large Dogs can vary by 5%
42%	62%	82%	% of willingness to invest in more expensive dog products can vary by 20%
14%	26%	44%	% of dog owning US households in our segment
Mean	28.0%		*Used source material to find standard deviation of triangular distribution
Standard Deviation	12.5%		https://www.itl.nist.gov/div898/handbook/mpc/section5/mpc541.htm

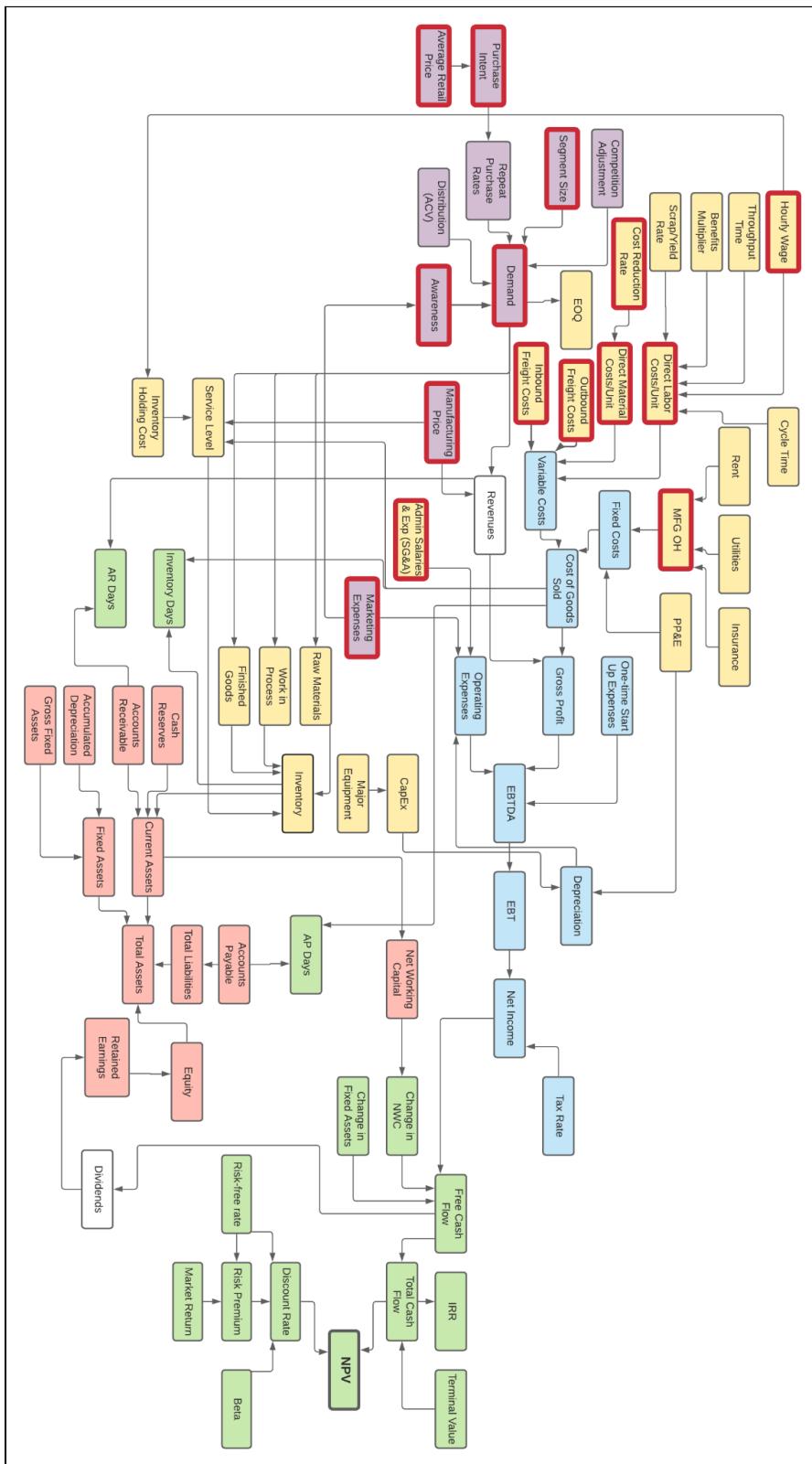
QM Appendix 2: Simulation 2 (Direct Material Cost/Unit) Standard Deviation Calculations

	Low	Base	High
Camera	\$ 15.99	\$ 19.93	\$ 30.00
Plastic Housing (ICD)	\$ 2.07	\$ 3.00	\$ 4.16
Power Cable (ICD)	\$ 2.99	\$ 3.99	\$ 5.00
Inductor (ICD)	\$ 0.10	\$ 0.80	\$ 3.00
Axis Gyro w/ Accelerometer Module	\$ 1.35	\$ 2.50	\$ 5.00
PCB	\$ 0.03	\$ 0.05	\$ 0.50
ST Micro STM32 F3 MCU (Microcontroller)	\$ 2.75	\$ 3.18	\$ 12.10
3dbi Bluetooth Antenna	\$ 0.20	\$ 0.28	\$ 2.75
ST Micro M24512-R 512 (EEPROM)	\$ 0.41	\$ 0.45	\$ 0.91
Copper Heat Sink	\$ 0.95	\$ 0.99	\$ 2.99
350mAH Li-ion Battery	\$ 1.05	\$ 1.35	\$ 3.86
Axle	\$ 0.30	\$ 0.50	\$ 1.79
Drive Wheel	\$ 0.10	\$ 0.80	\$ 2.85
Inductor	\$ 0.24	\$ 0.80	\$ 2.90
Speaker	\$ 0.50	\$ 1.20	\$ 4.15
DC Motor	\$ 0.80	\$ 1.00	\$ 3.40
Stability Ball Bearing	\$ 0.10	\$ 0.25	\$ 1.00
Polyethylene Housing	\$ 0.45	\$ 0.50	\$ 1.00
Direct Material Cost/Unit Variation	\$ 30.38	\$ 41.57	\$ 87.36
	0.73	1	2.10

QM Appendix 3: Demographic Analysis from Conjoint Analysis Results

Values	Column Labels				Grand Total	
	FEMALE	MALE	Non-Binary/Other			
Average of Priced @ 275	-0.75	-0.24	-0.25	-0.55		
Average of Priced @175	0.56	0.83	2.25	0.70		
Average of Thick Nylon	-0.17	-1.27	-1.50	-0.61		
Average of Pocked	0.01	0.76	0.00	0.28		
Average of Speaker on Camera	-0.37	-0.63	-0.50	-0.47		
Values	Column Labels				Grand Total	
	20-40	41-60+	Grand Total			
Average of Priced @ 275	-0.47	-0.63	-0.55			
Average of Priced @175	0.62	0.79	0.70			
Average of Thick Nylon	-0.83	-0.37	-0.61			
Average of Pocked	0.10	0.48	0.28			
Average of Speaker on Camera	-0.46	-0.48	-0.47			
Values	Column Labels				Grand Total	
	Employed full or part time	Not Employed	Retired	Grand Total		
Average of Priced @ 275	-0.69	-0.38	-0.22	-0.55		
Average of Priced @175	0.79	0.54	0.75	0.70		
Average of Thick Nylon	-0.89	-0.57	1.43	-0.61		
Average of Pocked	0.24	0.33	0.43	0.28		
Average of Speaker on Camera	-0.49	-0.54	0.07	-0.47		

QM Appendix 4: PupPal's Influence Chart

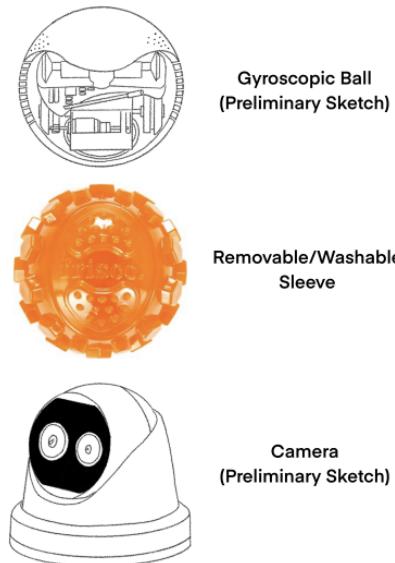


QM Appendix 5: Conjoint Survey

We are students at Boston University's Questrom School of Business collecting opinions for a business plan as part of a class project.

Our product is an interactive dog ball with live speech capabilities and an included camera. Owners will utilize an app allowing for control of both the ball and camera via a WiFi connection, enabling monitoring and interaction with the dog when the owners are away from home. The app will allow the user to move the ball, which houses a gyroscopic motor. The ball will also house a water-resistant speaker, allowing the user to talk to their pet. The ball will be encased in a washable/removable sleeve, allowing for more durability as well as color and texture options.

Below is an image of the preliminary concept of our product:



We will ask you to choose between the following features:

- **Price:** \$175 vs. \$200 vs. \$225
- **Sleeve Material:** The material of the washable/removable sleeve that will cover the gyroscopic ball (Vulcanized Rubber (the material tires are made of) vs. Thick Nylon)
- **Sleeve Texture:** The texture of sleeve that will cover the gyroscopic ball (Smooth vs. Pocked (like a golf ball))
- **Speaker Location:** The location of the speaker i.e. where your voice will be projected from (On the Ball vs. On the Camera)

Using your survey answers, we will be better able to understand how owners interact with their pets when owners are not at home, if at all. Your survey responses are anonymous.

This survey is designed to measure your preferences pertaining to our product.

Please rate the following profiles by selecting a number on the 7-point preference scale. Use 1 to represent strong dislike and 7 to represent strong liking.

Price	Sleeve Material	Sleeve Texture	Speaker Location	1	2	3	4	5	6	7
\$225	Thick Nylon	Pocked	On the Ball	<input type="radio"/>						
\$200	Vulcanized Rubber	Smooth	On the Ball	<input type="radio"/>						
\$200	Thick Nylon	Pocked	On the Camera	<input type="radio"/>						
\$225	Vulcanized Rubber	Smooth	On the Ball	<input type="radio"/>						
\$225	Thick Nylon	Pocked	On the Ball	<input type="radio"/>						
\$200	Vulcanized Rubber	Smooth	On the Ball	<input type="radio"/>						
\$175	Thick Nylon	Smooth	On the Camera	<input type="radio"/>						
\$200	Thick Nylon	Pocked	On the Ball	<input type="radio"/>						
\$175	Vulcanized Rubber	Pocked	On the Ball	<input type="radio"/>						

What is your current age?

- 20-30
 - 31-40
 - 41-50
 - 51-60
 - 61+
-

What is your gender?

- Male
 - Female
 - Non-binary / third gender
 - Prefer not to say
-

What is your current marital status?

- Married
- Not Married
- Other

What is your current employment status?

- Employed full-time
 - Employed part-time
 - Seeking opportunities
 - Retired
 - Prefer not to say
-

What is the number of people (including yourself) in your household?

- 1
- 2
- 3
- 4
- 5
- 6+

What is the number of children (between ages 0-12) in your household?

- 0
 - 1
 - 2
 - 3
 - 4+
-

What is the number of children (between ages 13-18) in your household?

- 0
- 1
- 2
- 3
- 4+

What is your household income?

- less than \$20,000
 - \$20,000 - \$59,999
 - \$60,000 - \$99,999
 - \$100,000 - \$139,999
 - \$140,000 - \$179,999
 - \$180,000 - \$219,999
 - \$220,000 +
-

What state do you live in? (ex: NY)

What is your zip code?

How many dogs do you have in your household?

- 0
 - 1
 - 2
 - 3
 - 4+
-

How often do you leave your dog at home alone?

- They are never alone
 - Rarely
 - Occasionally
 - Often
 - My household does not own a dog
-

Does your dog experience any kind of separation anxiety?

- Definitely yes
 - Probably yes
 - Might or might not
 - Probably not
 - Definitely not
 - My household does not own a dog
-

How often do you purchase products for your dog?

- Once a week
- Once a month
- Once every 3 months
- Once every 6 months
- Once a year
- My household does not own a dog

Does your household currently utilize a surveillance system to watch your pet when they are at home?

- Yes
- No

Works Cited

Anonymous Interviewee. Interview by Megan Latt. Video Interview. Boston, MA, February 3rd, 2021.

Anonymous Interviewee. Interview by Megan Latt. Video Interview. Boston, MA, March 3rd, 2021.

“7 Types of Organizational Structures.” Lucidchart, June 2, 2020.

<https://www.lucidchart.com/blog/types-of-organizational-structures>.

Bedford, Published by Emma, and Feb 9. “Impact of COVID-19 on Pet Ownership U.S. 2020.” Statista, February 9, 2021.

<https://www.statista.com/statistics/1191395/pet-ownership-status-due-to-covid-19-in-the-us/>.

“The Best Multi-Carrier Shipping Software for E-Commerce - Test.” Shippo. Accessed April 25, 2021.

<https://goshippo.com/shippo-the-best-multi-carrier-shipping-software-for-e-commerce-test>.

“Check out US TREASURY-CURRENT 10 YEAR's Stock Price (US10Y) in Real Time.”

CNBC. CNBC. Accessed April 26, 2021. <https://www.cnbc.com/quotes/US10Y>.

Chewy Inc., Form 10-K Chewy Inc., January 31st, 2021.

Commercial Real Estate. Accessed April 25, 2021.

<https://www.loopnet.com/Listing/1225-W-8th-St-Kansas-City-MO/21632207/>.

“Companies' Most Effective CSR Info Communication Channels, Per Consumers.” Marketing Charts, June 1, 2015.

<https://www.marketingcharts.com/brand-related-55065#:~:text=Companies%20Most%20Effective%20CSR%20Info%20Communication%20Channels%2C%20Per%20Consumers>

[rs.-June%201%2C%202015&text=Notes%3A%20How%20should%20companies%20communicate,as%20the%20most%20effective%20channel.](#)

Cooper, Jon. "Pet Ownership Statistics [2021]: U.S Pet Population." Spots.com, February 2, 2021. <https://spots.com/pet-ownership-statistics/>.

Cullen, R. (Publication date). "Pet Supplies: Incl Impact of COVID-19 - US". Mintel. <https://reports-mintel-com.ezproxy.bu.edu/display/987090/>.

Danziger, Pamela N. "Pets Are Going Digital: The Brands Pioneering The \$565 Million Market For Smart Pet Products." Forbes. Forbes Magazine, February 4, 2019. <https://www.forbes.com/sites/pamdanziger/2019/01/30/pets-are-going-digital-brands-pioneering-in-the-565m-market-for-smart-pet-products/>.

Data source: Google Trends

<https://trends.google.com/trends/explore?cat=432&geo=US&q=dog%20toys>.

Duff & Phelps, "Risk Premium Report 2013", 2013, via Duff & Phelps, accessed April 26, 2021.

Emken, Courtney. "Do Dogs Respond Better to Certain Names?" DogBoy's Dog Ranch, March 29, 2017. <https://www.dogboys.com/do-dogs-respond-better-to-certain-names/>.

Freshpet Inc., Form 10-K Freshpet Inc., December 31st, 2020.

"Global Pet Accessories Market - Industry Trends and Forecast to 2027." Pet Accessories Market – Global Industry Trends and Forecast to 2027 | Data Bridge Market Research. Accessed April 26, 2021. https://www.databridgemarketresearch.com/reports/global-pet-accessories-market#:~:text=Pet%20Accessories%20market%20is%20expected,forecast%20period%20of%202020-2027.&text=Pet%20accessories%20market%20is%20highly_products%2C%20care%20products%20and%20others

"Healthy Pet Magazine." Facebook. Accessed April 25, 2021.

<https://www.facebook.com/HealthyPetMagazine>

Horowitz, Juliana Menasce, Anna Brown, and Rachel Minkin. "The COVID-19 Pandemic's Long-Term Financial Impact." Pew Research Center's Social & Demographic Trends Project. Pew Research Center, March 24, 2021.

<https://www.pewresearch.org/social-trends/2021/03/05/a-year-into-the-pandemic-long-term-financial-impact-weighs-heavily-on-many-americans/>.

"How a 'Youth Boom' Could Shake Up Spending Trends." Morgan Stanley. Accessed April 25, 2021.

<https://www.morganstanley.com/ideas/gen-z-millennials-set-for-consumer-spending-increases>.

Jack Daly, "Pet Grooming & Boarding in the US ,," IBISWorld, January 2021,

<https://my.ibisworld.com.ezproxy.bu.edu/us/en/industry/81291/about>.

"Jolly Soccer Ball." Jolly Pets. Accessed April 25, 2021.

<https://jollypets.com/products/jolly-soccer-ball>.

Larocca, Melanie. Interview by George Christo. Video Interview. Boston, MA, March 3rd, 2021.

Lotz, Kristina. "New Survey Shows How Much We Love Posting Our Pets On Social Media."

iHeartDogs.com, May 8, 2016.

<https://iheartdogs.com/new-survey-shows-how-much-we-love-posting-our-pets-on-social-media/>.

Maverick, J.B. "What Is the Average Annual Return for the S&P 500?" Investopedia.

Investopedia, August 26, 2020.

https://www.investopedia.com/ask/answers/042415/what-average-annual-return-sp-500.a_sp.

Northern Star Acquisition Corp., Form 8-K Northern Star Acquisition Corp., February 16th, 2021.

"The Product Life Cycle of Blu-Ray Players," prezi.com, accessed April 26, 2021,

<https://prezi.com/ueflufgn2d9p/the-product-life-cycle-of-blu-ray-players/>.

“Quality Assurance.” New Process Fibre Company, Inc., April 30, 2020.

<https://www.newprocess.com/quality-assurance/>.

“Pet Grooming & Boarding in the US: 81291,” IBISWorld Industry Research COVID-19,

January 2021, <https://my-ibisworld-com.ezproxy.bu.edu/us/en/industry/81291/about>

Scardini, Jullia. Interview by Megan Latt. Video Interview. Boston, MA, March 3rd, 2021.

“Standard Deviations from Assumed Distributions.” 2.5.4.1. Standard deviations from assumed distributions. Accessed April 26, 2021.

<https://www.itl.nist.gov/div898/handbook/mpc/section5/mpc541.htm>.

“STIC Stock Price: Northern Star Acquisition Corp. Stock Quote (U.S.: NYSE).” MarketWatch.

Accessed April 26, 2021. <https://www.marketwatch.com/investing/stock/stic>.

Rudominer, Ryan. “Corporate Social Responsibility Matters: Ignore Millennials at Your Peril.”

Center for Social Impact Communication. Accessed April 25, 2021.

<https://csic.georgetown.edu/magazine/corporate-social-responsibility-matters-ignore-millennials-peril/>.

Trupanion Inc., Form 10-K Trupanion Inc., December 31st, 2020.

“Your Four-Legged Friends Are Sure to Give Target’s New Pet Assortment Two Paws Up.”

Target Corporate. Accessed April 25, 2021.

<https://corporate.target.com/article/2017/08/new-pet-assortment>.

Watters, Rebecca. (July 2020). PET SUPPLIES: INCL IMPACT OF COVID-19. Mintel.

<https://reports-mintel-com.ezproxy.bu.edu/display/987090/>.

Qualtrics Consumer Survey

Introduction:

We are a team of Boston University students working on a new product project. Please answer the questions as carefully and as honestly as possible. We will keep your responses confidential.

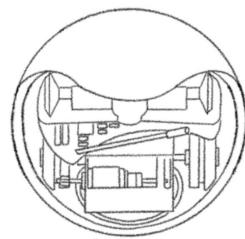
Screener questions:

- Do you have any dogs in your household? (Y/N)
- Do you have a small, medium, or large dog? (small, medium, large, no dog)

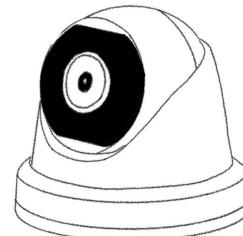
Product concept description and visual:

Watch and play with your dog while you're away! Our product is an interactive dog ball that can play preset sounds and comes coupled with a camera. The ball and camera are controlled by an app allowing for users to monitor and interact with their dog(s) when they are away from home. The app will allow the user to move the ball, allowing for fun and engaging play with your dog from afar. Owners will have the best control over the ball by keeping the play space confined within one area in the household (30 feet from the camera).

Below is an image of the preliminary concept of our product:



Gyroscopic Ball
(Preliminary Sketch)



Camera
(Preliminary Sketch)

Purchase intent and price questions:

1. After reviewing our product concept, how interested would you be in this product if it became available?



2. Based on our given product description, how much would you expect to see this product sold for at retail?

\$164 - \$227 \$228 - \$291 \$292 - \$355 \$356 - \$419 \$420 - \$483

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

Definitely Not Buy	Probably Not Buy	Not Sure	Probably Buy	Definitely Buy
×	×	×	×	×

4. If the company selling this product were to **donate a portion of profits to local rescue shelters**, would this change your intent to purchase?

- I would be significantly more likely to buy this product
- I would be slightly more likely to buy this product
- My purchase intention would not change

5. If the company selling this product were to **use sustainable materials to facilitate a recycling program for used products**, would this change your intent to purchase?

- I would be significantly more likely to buy this product
- I would be slightly more likely to buy this product
- My purchase intention would not change

6. Who do you think is more likely to buy this product? (check only one)

Owners in a smaller household with one dog _____

Owners in a larger household with one dog _____

Owners in a smaller household with multiple dogs _____

Owners in a larger household with multiple dogs _____

7. Which of the following names do you think would best fit a product like this? (Check one)

1. RemoBall 2. RuffRoom 3. WoofPortal
 4. PupPal 5. RuffConnect 6. Other: _____

8. My dog experiences separation anxiety when I leave the house.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

9. My dog is active.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

10. My dog enjoys playing with balls.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

11. I would enjoy interacting with my dog when I am out of the house.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

12. For classification purpose, please answer the following:

- Female
- Male
- Other
- Prefer not to say

13. Age:

- <20
- 20-30
- 31-40
- 41-50
- 51-60
- 61-70
- 71+

14. Place of residence:

Zip Code: _____
State: _____

15. Annual Household Income:

- Less than \$60,000
- \$90,000 - \$119,999
- \$60,000 - \$89,999
- \$120,000 - \$149,999
- \$150,000+
- Prefer not to say

16. How many individuals are currently living in your household (including yourself)?

- 1
- 2
- 3
- 4+

17. How many dogs do you have in your household?

- 1
- 2
- 3
- 4+

18. How often do you leave your dog at home for 3 or more hours every week?

- 1 or less times
- 2-3 times
- 4-5 times
- 6+ times

19. Where do you purchase dog accessories? (select all that apply)

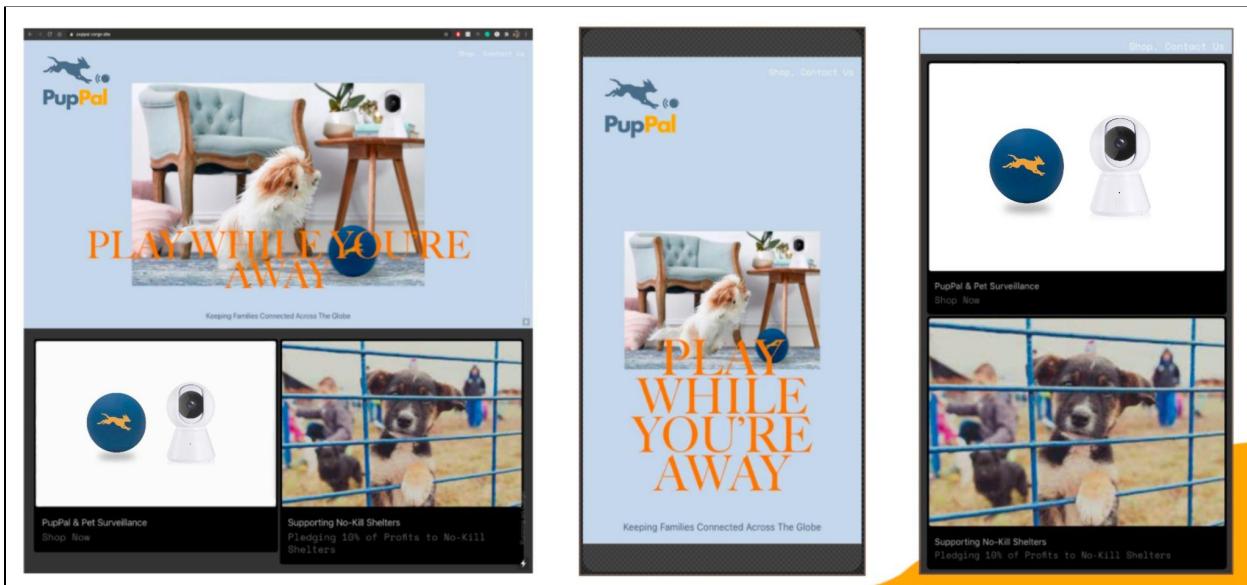
- Pet Stores
- Other Retail Stores (i.e. Target)
- Online

Plan for data collection:

- Close friends and family (Parents, current dog owners)
- Facebook and Facebook groups (Dog enthusiasts)
- Instagram
- Linkedin
- Text/direct messages
- Subreddit threads (i.e. dog enthusiasts)

Product Visuals

MK Appendix 15: Website Home Page



MK Appendix 16: Trade Show Booth

