Below-6

Hilary Cheng 207577040

Emily Shao 207729220

Maitry Mistry 207780130

Sunny Xie 207628570

Matthew Froggatt 180215970

Lab D04

Michael Ross

Contents

Execu	tive Summary	Ι
Ventu	re Detail	. #
Oppor	rtunity Validation	
0	Increased Demand for Cold Drinks Means Increased Demand for Below-6	#
0	Low Switching Costs means that Companies Can Easily Switch to Below-6	#
0	Growing and Competitive Restaurant Industry Provides Opportunity for Below-6	#
0	Overall Industry Profitability	. #
0	Supplier Power	. #
0	Barriers to Entry That Can Easily Overcome and Create Once Established - Medium	#
0	Competitors – Number and Size	. #
0	Quality and Number of Substitutes	.#
Challe	enges and Compensating Strategies	
0	Import to Reduce Bargaining Power of Domestic Battery Suppliers and Reduce Costs	.#
0	Provide Incentives for Bars and Restaurants to Switch to Below-6	#
Future	e Effect of Environment on Profitability	
0	Solid-State Cooling Prevents Safety Hazards and Avoids Many Legal Regulations	.#
0	Steady Employment Rates Means Customer Spending is Stable	.#
0	Low Cooling Efficiency Means Improvements Can Lower Cost and Increase	
	Effectiveness	.#
0	Differentiation of Product so Profitability Mostly Unaffected by Substitutes	
	#	
Refere	ences	#
Δnner	ndiv	#

Executive Summary

There is a massive demand among Canadians for cold drinks year-long. According to a recent survey conducted, 70.2% of people order cold drinks rather than warm drinks (refer to Exhibit A). This means consumers demand cold beverage service from restaurants and bars. Currently, these bars and restaurants serve drinks with ice which, however, customers feel it affects their drinking experience, with 74.5% of survey respondents saying they feel ice dilutes the flavour of drinks (refer to Exhibit G). This opens an opportunity in the market for a device which offers cold drinks to customers while also preventing the dilution of the flavour of drinks.

Below-6 is the perfect solution to keep a drink cold while maintaining the complete flavour of the drink. Below-6 functions as a traditional coaster, but differentiates itself using refrigeration technologies to keep beverages constantly cold. It's user friendly nature, portability and compactness make it optimal for restaurant use.

Below-6's advantages over its competitors include its small size and its ability to run on a battery. Below-6's small size makes it far more ideal for restaurant use, and its battery means that its cooling can last through a restaurant meal. Below-6 is sold in bulk quantities directly to restaurants to ensure easy adjustment to scale, and to ensure that Below-6 benefits directly from all revenues.

Below-6 targets high-end restaurants and bars that provide premium experiences for customers. According to IBISWorld the restaurant industry is highly competitive (Sayler, 2017). This means that restaurants and bars are more willing to invest in new products that provide them with a competitive advantage. Below-6 offers restaurants/bars an opportunity to increase the quality their cooled drinks by avoiding ice, therefore increasing their customer satisfaction and

their competitive advantage. Since restaurants and bars place heavy emphasis on their reputation, increasing customer satisfaction is an important aspect of their strategy.

Below-6 has a unique position in the Restaurant and Hotel Equipment Industry because it has a low-switching cost for consumers and creates switching costs for existing customers which makes it profitable in the future. There is a large quantity of high-end restaurants and bars therefore Below-6 has the ability to acquire a large customer base.

Below-6 is a unique product that introduces a better way to enjoy alcoholic beverages. It brings social and economical profits to high-end restaurant and bars. Below-6 is sure to be cooling the drinks of restaurant and bar customers across Canada.

Venture Detail

Below-6 is a cheap, reliable, and portable electric coaster that keeps beverages cool. The product has a similar size to traditional coasters with a compact design and an outer frame made of plastic which makes it durable (refer to Exhibit B for prototype). It has a battery life of two hours which guarantees that users' drinks stays cold through the course of their meal (Statistics Canada, 2011). Furthermore, Below-6 is charged wirelessly using a charging system similar to that of restaurant pagers (refer to Exhibit C for example).

Below-6 is programmed to keep the cooling plate at around 4°C to 6°C, since carbonated beverages tend to lose their carbonation at a slower rate when kept cool. The cooling plate is made of aluminium, which has strong thermal conductivity to effectively maintain the desired temperature (Inglehart, 2018) and it is kept between 4°C to 6°C by using a thermoelectric cooler (TEC) (see Exhibit D for TEC). Aluminum, with its low electrical conductivity, also removes any safety hazards associated with the product (NDT Resource Center, N.D). As a byproduct of the cooling process, the opposite end of the coaster heats up. Therefore, to mitigate this, ventilation along the sides of the coaster is implemented.

This venture generates revenue through wholesaling directly to restaurants and bars. The costs of making a single Below-6 coaster is approximately \$4.89, so it costs \$6.00 for a profit of \$1.11 per unit sold (Refer to Exhibit E for individual costs). However, this cost is expected to drop as production increases, since economies of scale decreases manufacturing costs and lower our retail price. Below-6 is targeting high-end restaurants and bars that are willing to purchase products to increase their customer's satisfaction.

Opportunity Validation

Increased Demand for Cold Drinks Means Increased Demand for Below-6

Both Americans and Canadians have increased their demand for cold drinks. From QSR Magazine, Hemphill explains, "Americans had traditionally consumed coffee hot, but the cold coffee hurdle has been leapt ... Most Americans are now comfortable in drinking coffee cold. So now it's a year-round product, hot more often in winter, cold more often in summer" (Wolf, 2012). This shows an increase in demand for cold drinks because people are purchasing a typically hot drink, coffee, cold. Since Below-6 cools drinks, the increase in demand for cold drinks opens a larger market to Below-6. Additionally, according to a study published by *Nature* journal, food and beverage temperature affects their taste (Heller, 2005). In order to keep customers satisfied, restaurants and bars needs to keep drinks cold to maintain the beverage's taste. Below-6's cooling ability perfectly satisfies restaurants' needs, and in keeping drinks cool, improve restaurants' customer satisfaction.

Low Switching Costs Means that Companies Can Easily Switch to Below-6

Since coasters are a relatively standard and inexpensive product, companies incur minimal switching costs when switching to Below-6. Coasters are typically cardboard or other materials placed under a drink to protect the table from condensation, and Below-6 is no different. While Below-6 may offer unique features in comparison to standard coasters, its basic form and function is identical. This means that there is very little cost associated with learning the differences between products. Furthermore, since coasters are such simple products, there is no infrastructure associated with changing coasters, so the only switching costs are the sunk costs of the coasters, and the purchase price of Below-6.

Growing and Competitive Restaurant Industry Provides Opportunity for Below-6

The restaurant industry is expected to continue its growth. According to IBISWorld, the corporate profit for full-service restaurants is expected to increase at an annual rate of 5.8% over the next four years (Sayler, 2017). Since the profit of the restaurant industry is increasing, restaurants and bars have high confidence in their future earnings. This means restaurants making purchases that increases their competitive advantage over other restaurants. Furthermore, the restaurant industry is highly competitive (Sayler, 2017), so restaurants need any competitive advantage possible. Combined with the growth in the profits of the restaurant industry, this means that restaurants are far more likely to purchase items that provides them with some form of differentiation. This makes Below-6 highly attractive to restaurants, as it gives them an unconventional way to differentiate themselves from competition.

Overall Industry Profitability

Below-6 is a part of the Restaurant and Hotel Equipment Industry which has seen growth in the past five years. The restaurant and hotel industry is expected to grow 1.6% annually for the next 5 years (Morea, 2017). Moreover, new firms that make greater use of technology to fulfill restaurant needs can gain a competitive advantage (Grand View Research, 2018). Therefore, Below-6 can easily be able to enter the industry, since industry growth allows Below-6 to expand with the industry, and Below-6's advantage over other products allows it to gain a foothold in the restaurant and hotel equipment industry.

Supplier Power

The suppliers in the Restaurant and Hotel Equipment industry include raw-material suppliers, and general-purpose equipment manufacturers in Canada. Below-6 requires the use of

generalised battery, cooling mechanisms, and an abundant of raw metals which increases the number of potential manufacturers for Below-6 in the most cost effective way. Supplier power can be effectively managed by strategically utilizing different manufacturers.

Barriers to Entry That Can Easily Overcome and Create Once Established - Medium

There is a medium barrier to entry for this industry. Due to the lack of specialized assets and technology in the restaurant equipment industry, it is easy to gain an attractive position with Below-6 in the industry. Furthermore, barriers to entry for potential entrants can be increased by creating a patent. There is low differentiation in current customers purchase of coasters, which makes it easy to gain a larger customer base.

Competitors – Number and Size

The current competitors, The Drink Induction Chiller and Coaster Cool (CoolDesign, n.d.) offer a mechanism to cool drinks but neither are optimal in a restaurant setting. The Drink Induction Chiller is bulky and needs to be constantly charged which makes it inconvenient for restaurant servers, whereas Below-6 is compact and portable which makes it easy to store and use (Dynamic, 2018). The Coaster Cool needs to be constantly refrigerated which means it needs to be cooled during the course of the meal, unlike Below-6 which stays cool for the duration of an average meal (Refer to Exhibit F). These are the only two major competitors and both are marketing their product for personal use, thus their target markets differ from Below-6's which targets high-end restaurants and bars.

Quality and Number of Substitutes

The current substitutes available are ice and regular coasters. Both products lower the quality and taste of the drink because they fail to keep the drinks cool for a long period of time

(Debbi, n.d.). This increases costs and waste because drinks are constantly needed to be replaced. A less popular substitute is the method of cooling the temperature of the venue which is not cost efficient and not ideal during colder temperatures.

Challenges and Compensating Strategies

Import to Reduce Bargaining Power of Domestic Battery Suppliers and Reduce Costs

An important feature of Below-6 includes its rechargeable battery. This means that the bargaining power of battery suppliers can impact the cost of Below-6 and hence influence potential profits. Therefore by importing batteries from China, it decreases costs. China's lithium-ion battery makers cut prices down by around 40% last year (Deign, 2017). Since Below-6 does not require high-end batteries, inexpensive batteries can be used.

Provide Incentives for Bars and Restaurants to Switch to Below-6

The cost of switching from regular coasters to Below-6 and the provision of coaster from many alcohol companies create barriers to entry. To overcome these barriers, a strategy is to provide trials to bars and restaurants. This would increase our customers' exposure to Below-6 and encourage restaurants and bars invest in the product. Another strategy would be to form a partnership with liquor providers to bundle Below-6 with the goods they sell. This increases the customer base of Below-6 and add a unique factor to the goods sold by liquor providers.

Future Effect of Environment on Profitability

Solid-State Cooling Prevents Safety Hazards and Avoids Many Legal Regulations

Below-6's main political hurdle is that it must be safe for consumers to use, and follow Canadian regulations regarding batteries and electricity. Since Below-6 uses thermoelectric cooling, it cools using electricity rather than the harmful gasses used in standard refrigeration

(Me Mechanical, 2018). This means that it does not have to adhere to any guidelines relating to typical refrigeration using harmful gasses, and must only follow electricity guidelines.

Steady Employment Rates Means Customer Spending is Stable

Since the target market of Below-6 is high-end restaurants and bars, these are luxury products that are highly affected by employment rates. Since 1976, the average employment rate of Canada has been steady around 60%, with a low of 56%. While employment strongly affects the profitability of Below-6, Canada's employment rates are extremely steady, and are unlikely to change in the near future (Trading Economics, 2018). To mitigate the effects of any potential unemployment, prices for Below-6 can be lowered to incentivize purchases.

Low Cooling Efficiency Means Improvements Can Lower Cost and Increase Effectiveness

Finally while TEC is mildly effective, it is extremely inefficient compared to typical cooling methods (Brown, Fernandez, Dirks, & Stout, 2010). In order to ensure that the product performs as intended, and at a high quality, efforts must be made in order to further develop this technology. A more efficient method of cooling means that not only can Below-6 be more effective, but it also reduces the costs of manufacturing Below-6, since a smaller battery is more sufficient to attain the same results.

Differentiation of Product so Profitability Mostly Unaffected by Substitutes

Additionally, from surveys, around 75% of people felt that ice, the main substitute for Below-6, dilutes the flavour of beverages (see Exhibit G). Below-6 avoids this problem by cooling drinks without ice. This means that for consumers who want a flavoured beverage, our product provides a clear advantage over the substitute, so there is little incentive to use substitute products.

References

- Amazon. (n.d.). *Bakelite Circuit Board Prototype Single Copper*. Retrieved from https://www.amazon.ca/RUNRO-Bakelite-Circuit-Prototype-Single/dp/B07J4H6XRQ/ref =sr_1_5?s=electronics&ie=UTF8&qid=1543118381&sr=1-5&keywords=circuit+board
- AliExpress. (n.d.). Tec1 12706 Heatsink Thermoelectric Cooler Cooling Peltier Plate Module.

 Retrieved from

https://www.aliexpress.com/item/TEC1-12706-Heatsink-Thermoelectric-Cooler-Cooling-Peltier-Plate-Module-12V-60W/32639866551.html?src=google&albslr=227527957&src=google&albch=shopping&acnt=494-037-6276&isdl=y&slnk=&plac=&mtctp=&albbt=Google_7_shopping&aff_platform=google&aff_short_key=UneMJZVf&&albcp=1633541485&albag=62156539197&trgt=296904914040&crea=en32639866551&netw=u&device=c&gclid=CjwKCAiAiuTfBRAaEiwA4itUqNeyWQaXf58ytBgMTS0zuRkriAjX8VH3wUlH0YjnQcQsvQzwcxmiGRoCFh8QAvD_BwE&gclsrc=aw.ds

- Atkinson, S. (2009, May 25). *Last orders for beer mat maker?* Retrieved from http://news.bbc.co.uk/2/hi/business/8049077.stm
- Ban, Volha (2017, May 3) Analysis of the Upscale/Fine Dining Sector in the Restaurant Industry

 Retrieved from
 - https://scholarsarchive.jwu.edu/cgi/viewcontent.cgi?article=1008&context=mba_student
- Brown, D. R., Fernandez, N., Dirks, J. A., & Stout, T. B. (2010, March). *The Prospects of Alternatives to Vapor Compression Technology for Space Cooling and Food Refrigeration Applications*. Retrieved from https://www.pnnl.gov/main/publications/external/technical_reports/pnnl-19259.pdf

- CoolDesign. (n.d.). *What's Cooler*. Retrieved from http://www.coastercooler.com/coaster-cooler.php
- Debbi, Harold. (2018, January 9). *Is Carbonation Affected By The Temperature?*. Retrieved from https://sciencing.com/info-8793154-carbonation-affected-temperature.html
- Deign, J. (2017, March 6). Chinese Lithium-Ion Battery Makers Poised to Cut Domestic Prices
 40%. Retrieved from

https://www.greentechmedia.com/articles/read/chinese-battery-makers-poised-to-cut-dom estic-prices-40-percent#gs.ZGkw0HM

- Dynamics, Rose. (2018). *Drink Induction Chiller Electric Coaster*. Retrieved from https://www.indiegogo.com/projects/drink-induction-chiller-electric-coaster#/
- Grand View Research. (2018, February). Food Service Equipment Market Size & Trends

 Analysis Report By Product, By Washware, By Region, And Segment Forecasts,

 2014-2024. Retrieve from

https://www.grandviewresearch.com/industry-analysis/food-service-equipment-market

Heller, Lorraine (2005, Dec 19) Food Temperature Affects Taste, Reveals Scientists. Retrieved from

https://www.beveragedaily.com/Article/2005/12/19/Food-temperature-affects-taste-reveal-scientists

Helman, C. (2015, February 17). How Much Electricity Do Your Gadgets Really Use? Retrieved from

https://www.forbes.com/sites/christopherhelman/2013/09/07/how-much-energy -does-your-iphone-and-other-devices-use-and-what-to-do-about-it/#4cfcaeb2f702

- Home Depot. (n.d.). *Everbilt ¼ in. x ½ in. External Hex-Head Cap Screw*. Retrieved from https://www.homedepot.com/p/Everbilt-1-4-in-x-1-2-in-External-Hex-Head-Cap-Screw-807198/204325655
- II-VI Marlow. (n.d.). *How Do Thermoelectric Cooler (TEC) Work?*. Retrieved from: https://www.marlow.com/how-do-thermoelectric-coolers-tecs-work
- Inglehart, J. A. (2018, March 13). *Aluminum Vs. Steel Conductivity*. Retrieved from https://sciencing.com/aluminum-vs-steel-conductivity-5997828.html
- KPMG (2016) An appetite for change: key trends driving innovation in the restaurant industry.

 Retrieved from
 - https://assets.kpmg.com/content/dam/kpmg/pdf/2016/07/kr-gtl-an-appetite-for-change.pf
- Made in China. (2017). *High Quality Blue PP ABS Plastic*. Retrieved from https://fsfamous.en.made-in-china.com/product/jNRJYzuybrWV/China-High-Quality-Bl ue-PP-PE-ABS-Pet-Best-Price-for-Plastic-Material.html
- Me Mechanical. (2018, April 16). *Different Methods of Refrigeration*. Retrieved from https://me-mechanicalengineering.com/methods-of-refrigeration/
- MetalMiner Prices. (n.d.). *Aluminum*. Retrieved from https://agmetalminer.com/metal-prices/aluminum/

ndid=929

- Morea, S. (2017, October). Restaurant & Hotel Equipment Wholesaling in Canada. Retrieved from https://clients1-ibisworld-com.libproxy.wlu.ca/reports/ca/industry/industryoutlook.aspx?i
- N.D.T Resource Center. (n.d.). Conductor and Insulator. Retrieved from

- $https://www.nde-ed.org/EducationResources/HighSchool/Electricity/conductors insulators \\. htm$
- Price Compare. (n.d.). 3D Printing Materials. Retrieved from https://www.3ders.org/pricecompare/
- Ross, Olivia (2018, July). *Bars & Nightclubs in Canada*. Retrieved from https://clients1-ibisworld-com.libproxy.wlu.ca/reports/ca/industry/default.aspx?entid=16
- Sayler, Brian (2017, Dec 19) *Full-Service Restaurants in Canada*. Retrieved from https://clients1-ibisworld-com.libproxy.wlu.ca/reports/ca/industry/default.aspx?entid=16
- SYHL Store. (n.d.). 30W Semiconductor Thermoelectric Peltier Cooler Heater. Retrieved from https://www.gearbest.com/development-boards/pp_142071.html?wid=1433363¤cy=CAD &vip=15877873&gclid=CjwKCAiAiuTfBRAaEiwA4itUqNi2YrTDlS-3Y04DWpkY6Oo jNnK3rbmlxJwrxY6-X_TyABMUembZqBoCwsYQAvD_BwE
- Trading Economics. (2018). *Canada Employment Rate*. Retrieved from https://tradingeconomics.com/canada/employment-rate
- Union of Concerned Scientists. (2018, March 9). Electric Vehicle Battery: Materials, Cost,

 Lifespan. Retrieved from

 https://www.ucsusa.org/clean-vehicles/electric-vehicles/electric-cars-battery-life-material
 s-cost
- Walmart. (2018). Household Bedroom Rubber Furniture Fitment Table Leg Protection Pad 64pcs. Retrieved from

https://www.walmart.com/ip/Household-Bedroom-Rubber-Furniture-Fitment-Table-Leg-Foot-Protection-Pad-64pcs/152090419

Wolf, Barney. (2012, July). No Fizz, No Problem. Retrieved from

https://www.qsrmagazine.com/menu-innovations/no-fizz-no-problem?page=1

Appendix

Exhibit A - People's Preference Between Cold and Hot Drinks (from Nov. 18 -25)

Do you feel you are more likely to buy cold drinks than warm drinks in general?

47 responses

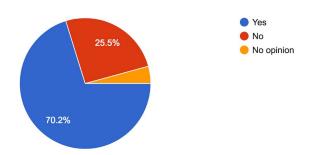


Exhibit B - Sample Prototype of Below-6

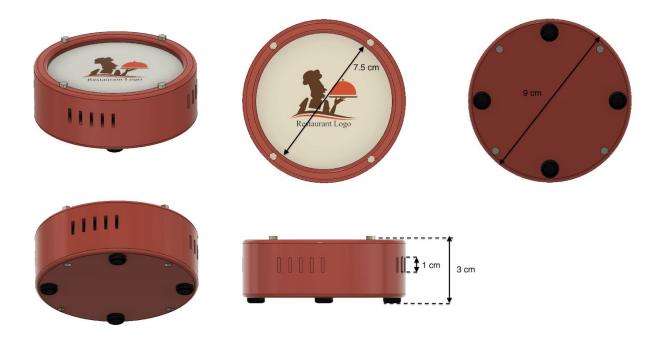


Exhibit C - Charging System of Restaurant Pagers used in Below-6



https://images-na.ssl-images-amazon.com/images/I/61W0VyAdscL._SL1010_.jpg

Exhibit D - Sample Thermoelectric Cooler (TEC) and Its Operating Principle



https://core-electronics.com.au/media/catalog/product/cache/1/image/650x650/fe1bcd18654db18 f328c2faaaf3c690a/1/3/1331-04.jpg

Table 1: The Operating Principle of Thermoelectric Cooler (TEC)

How it Works	Benefits	
 Operates based on the Peltier Effect Peltier Effect transfers heat between two electrical junctions and thus, creates a difference in the temperature The electrical junctions has voltage 	 No chlorofluorocarbons or refrigerant emissions Low maintenance Long lifetime Controllable 	

inputted which creates electric)
currents	

- This causes heat to be removed from one junction, turning it cool and the heat is moved to the other junction making it hot
- Compatible with extreme environments or remote locations
- Capable of cooling far below ambient temperatures
- Performance independent of orientation

(II-VI Marlow, n.d.)

Exhibit E - Calculations of the Individual Cost of Below-6

Materials	Market Pricing	Amount Needed for One Below-6	Costs for One Below-6
Aluminum	\$3.73/kg (MetalMiner Prices, n.d.)	Needs: 200g = 0.2kg	$3.37/\text{kg} \times 0.2\text{kg} = 0.75$
Batteries	\$200/kwh (Union of Concerned Scientists, 2018)	- Battery usage of phone in one day is 0.00545kwh (Helman, 2015). Assume Below-6 uses a quarter of that amount	\$200/kwh x 0.00545kwh x 0.25 = \$0.27
TEC	\$2.49/TEC (AliExpress Store, n.d.)	Needs: 1	\$2.49
ABS Plastic	\$0.89/kg (Made in China, 2017)	Needs: 200g = 0.2kg	$0.89/\text{kg} \times 0.2\text{kg} = 0.18$
Screws	\$0.12/screw (Home Depot, n.d.)	Needs: 4	\$0.12 x 4 = \$0.48
Circuit Board	\$2.10/10 boards (Amazon, n.d.)	Needs: 1	\$2.10/10 boards / 10 = \$0.21
Rubber Pad	\$8.19/64 rubbers (Walmart, 2018)	Needs: 4	\$8.19/64 rubbers / 64 x 4 = \$0.51
Total			\$4.89

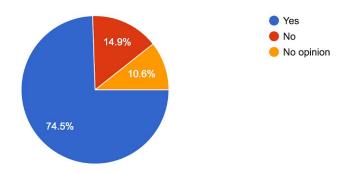
Exhibit F - Substitute and Competitors Product Chart

Competing and substitute product/service	What it does	How your venture is different in a valuable way
The Drink Induction Chiller https://c1.iggcdn.com/ indiegogo-media-prod -cld/image/upload/c_l imit,w_695/v1530584 338/ssnm3frrdtahmev s1ruz.jpg	Electronic stand/ holder that cools drinks. - The device is not portable. - It is meant for personal use; on a night stand or desk - Big and bulky, not a coaster	Our product is meant for commercial restaurant use. It is: - Small, compact - Portable - Offers personalisation (colour, style, size)
http://www.coasterco oler.com/resources/38 9932044.jpg	 A coaster that chills drinks. Product needs to be refrigerated before use for up to 10 minutes. Used in restaurants 	Our product is completely electronic: - Battery operated means it can keep drinks colder for longer time - More convenient in restaurant setting because they can charge the device during after hours - High quality batteries means it takes less time to charge

Exhibit G - Ice Dilutes the Flavor of Beverages (Survey Conducted on Nov. 18 - 25, 2018)

Do you feel that ice dilutes the flavour of beverages?

47 responses



Reflection and Revision

Our last new venture idea was a product called Clipp that acted as collaborative platform for group work for students and businesses. The online platform enabled group members to upload, create, edit and comment on projects together. After we got the feedback from our TA, we realized that our original idea was faulty and had many overlaps with existing products such as Google Drive and Slack. We were also focused on targeting a very broad market group, students, universities and businesses, which is not ideal for a new venture. Additionally, our research did not provide sufficient proof of demand of the product in the industry or if the industry was worthwhile pursuing. That is why we decided to change our idea with the goal of creating a product that is completely unique and in currently in demand.

According to our TA, our target market was too broad because we attempted to satisfy everyone's needs with Clipp. So with Below-6, instead of making our product commercially available to everyone, we narrowed our market to only high-end restaurants and bars. We also focused on the specific wholesaling strategy instead of selling through a distribution chain to attain the maximum number of customers in the specific target group. While we were working on Clipp, we had a ton of overall industry information which caused disorganization and a lack of focus. Therefore with Below-6, we narrowed our target market and industry and conducted research to explicitly prove the demand and opportunity of Below-6 for our targeted customers.

In conclusion, our TA's feedback was extremely helpful because it allowed us to focus on the specifics of our product and conduct a thorough analysis that is relevant to the determinants of success for our product. We felt that our old venture did not meet the criteria of a

successful which encouraged us to change our idea to a product that is feasible and needed in the
market.