Executive Summary

Company Brief
Pan Fermenti is a craft brewing consulting company with the hope of one day opening a local brewery to market some of its own recipe. Along with consultation for microbreweries, craft brewery, Pan Fermenti will also be marketing equipment for home brewer interested in reducing the manual inputs in the wort process that often result in inconsistency in home brewing.

Market
The target market for this are local craft/microbreweries. These will be breweries interested in improving brewing process to incorporate a new taste, as well as be good stewards of the limited resources on the Earth. Once the company has established a refined their recipes, the company will extend its market to consumers and beer lovers in Grand Rapids. Pan Fermenti will also be targeting homebrewers, both beginners and avid brewers. The equipment will be directed towards brewers interested in consistency and ease in the brewing.

Business Strategies
The company will be designing high quality product and a reliable process that breweries all over can implement. The team also plans on investing in innovation, research and development, understanding that as a part of consulting the team will need to be able to implement the grain replacement recipe with as many different tastes as the market requires.

Key People
President – Jeremiah VanAntverp Ph.D.
VP of Engineering – Donald McDonald
Head of Product Development – Hanfei Niu
Head of Research and Development – Michael Schur
Head of Product Engineering - Ayooluwa Ayoola
Sales and Marketing Manager - Jerome Navarro

Financials
Pan Fermenti is asking for 95% of the capital investment, which will be used for the purpose of starting the company. From there Pan Fermenti plans on making a 40% return on the initial investment annually.
Table of Contents

I. Vision and Mission Statement
   A. Entrepreneur's vision for the company
   B. Values and principles on which the business stands

II. Industry Profile and Overview
   A. Industry background and overview
   B. Major customer groups
   C. Regulatory restrictions
   D. Significant trends
   E. Growth rate
   F. Barriers to entry and exit
   G. Key success factors in the industry
   H. Outlook for the future

III. Business Strategy
   A. Desired image and position in market
   B. Company goals and objectives
      1. Operational
      2. Financial
      3. Other
   C. SWOT analysis
      1. Internal Strengths
      2. Internal Weaknesses
      3. External Opportunities
      4. External Threats
   D. Competitive strategy
      1. Cost leadership
      2. Differentiation

IV. Company Products and Services
   A. Description
      1. Product uniqueness
      2. Customer benefits
      3. Warranties and guarantees
   B. Patent or trademark protection (if any)
   C. Future product or service offerings

V. Marketing Strategy
   A. Target market
   B. Customers' motivation to buy
   C. Market size and trends
      1. How large is the market?
         Figure 1. Craft breweries in the United States per year.
      2. Is it growing or shrinking? How fast?
   D. Advertising and promotion
      1. Message
      2. Media
      3. Budget
      4. Plans for generating publicity
   E. Pricing
      1. Desired image in market
      2. Comparison against competitors' prices
      3. Discount Policy
   F. Distribution strategy - Channels of distribution
   G. Test market results
VI. Competitive Analysis
   A. Existing competitors
   B. Potential competitors:

VII. Description of Management Team
   A. Key managers and employees
      1. Background:
         a. Business (Sales and Marketing department)
         b. Technology (research and development department)
      2. Resumes of key managers and employees (suitable for an appendix)

VIII. Operation
   A. Ownership
   B. Company structure (organization chart)
   C. Decision making authority
   D. Significant compensation and benefits packages
   E. Facilities:
      1. Location: where and rationale
      2. Layout: type and rationale
      3. Possible setup constraints

IX. Finance
   A. Financial Forecasts (suitable for an appendix)
      1. Key assumptions
   B. Financial statements
   C. Break-even analysis
   D. Ratio analysis

X. Loan or Investment Proposal
   A. Amount requested – Equity and/or Debt
   B. Purpose and uses of funds
   C. Exit Strategy

XI. Appendices
    Resumes
    President – Jeremiah VanAntwerp Ph.D.
    VP of Engineering – Donald McDonald
    Head of Product Development – Hanfei Niu
    Head of Research and Development – Michael Schur
    Head of Product Engineering - Ayooluwa Ayoola
    Sales and Marketing Manager - Jerome Navarro
I. Vision and Mission Statement

Pan Fermenti’s vision is to provide services that allows for seamless marriage between bakeries and breweries, allow breweries to take advantage of the resources around them to improve the taste of their brews will limiting waste.

A. Entrepreneur's vision for the company

The company’s current goal is to market recipes that utilize less grain and more recovered bread from local bakeries. The company will be providing consulting services to aid breweries in developing relationships with bakeries in the area. The bakeries will provide the day old bread that will be used by the brewery. Pan Fermenti will be making changes the breweries recipe to retain the familiar taste, while using less grain. Along with making changes to the recipe Pan Fermenti will also be improving on the breweries knockout process, and other waste management problems.

The consultation service will help breweries interested in reducing the cost for resources for batch brewing because it will be replacing at least 30% of the cost spent on grains with free recovered bread. It will make it easier to set up the necessary partnership to continue utilizing recycled bread in the brewing process.

B. Values and principles on which the business stands

Pan Fermenti values stewardship, transparency, and trust. These values are to be incorporated in the design process, the construction, and marketing of product. Pan Fermenti respects the trust that customers have with their local bakeries and breweries; understanding that customers go in expecting the best tasting and freshest product, especially when the product will be ingested. In order to encourage this relationship of trust, Pan Fermenti intends on being open with the product and the content of the recipe, and/or the equipment.

II. Industry Profile and Overview

A. Industry background and overview

Brewing itself dates as far back as the Ancient Babylonians. However, the industry started to take flight and evolve in the United States in about 1970. At this point there had been a noticeable decline in variety and success in the brewing industry. The industry shrunk to about 40 minimum breweries and was predicted to only 5 brewing companies and home-brewing started to take the reins. Home brewing allowed individuals who to incorporate the traditions associated with the root of brewing. With the boom in home brewing, craft breweries were brought to live. Home brewers

---

began marketing their brews, with the hope of revitalizing the taste of beer and provide original and unique tastes to the public. By 1980, these home brewers began changing the image of beer from mass produced bland simple drinks to unique, and rich drinks.  

For a company to be considered a craft brewery today it has to at least be 75 percent independently owned by the craft brewer themselves, and it is traditional. Traditional means the recipes have to come from original brewing ingredients, going back to the roots of brewing. This still allows room for innovation for adding flavor to the brew, but flavoring of malt beverages. Craft brewers are often small and local, they take the traditional flavors and add a unique spin to it.  

B. Major customer groups

Michigan alone has up to 424 Craft breweries, while the city of Grand Rapids has up to 12 craft Breweries. Craft breweries can be broken down into 4 segments: Microbreweries, Brewpub, Contract Brewing Company, and Regional Craft Brewery. However, are main customers of will exclude Contract Brewing Company. This is because although Contract Brewing Companies play a role in marketing and selling and distributing its beer. It often has other breweries produce the beer, this could be to add to the company’s brewing batch size but it is often to leaves the brewing and packaging of it beer to other breweries.  

Table 1 shows the brew down of breweries in Grand Rapids alone.

Microbreweries make less than 15,000 barrels of beer per year, where 1 barrel is about 119 liters. They often sell at least 75 percent of the produced beer off-site. Brewpubs are often restaurant-brewery style, where at least 25 percent of the beer is sold in the brewpub. The brewed beers are often made to be sold in the restaurant and/or bar, usually served right from storage containers.

<table>
<thead>
<tr>
<th>Type of Craft Brewery</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microbreweries</td>
<td>4</td>
</tr>
<tr>
<td>Brewpub</td>
<td>7</td>
</tr>
<tr>
<td>Regional</td>
<td>1</td>
</tr>
</tbody>
</table>

Grand Rapids Brewing Company is a local brewpub that the team is partnering with. The brewery represents one of Pan Fermenti’s target market group. Grand Rapids Brewing Company’s story begins on the first of January in 1893, with the merger of six local breweries. After the company’s  

---


BUS357: Business Proposal
start it thrived for 20 years before the prohibition in the 1920’s disrupted its success story. In 2012, the brewery was revitalized in downtown Grand Rapids once again. The company boasts a traditional style brewing process and recipe, paying homage to the Grand Rapids Heritage. Furthermore, the brewing company holds sustainability as one of its core values. This is seen first in the way the brewery was built, with its floor made of repurposed wood, the arts and furniture designed by local artisans. It is then seen in the efforts the company makes to recycle and compost their waste, this reduces the waste that goes to the landfill by 90 percent. The company’s history and the way it values sustainability, makes it a perfect target customer for the process the team is designing.

Along with established craft breweries, Pan Fermenti will be marketing its process to start-up breweries. With startup breweries there is more room for flexibility making implementation less challenging. Homebrewers are also prospective customers. Equipment the team will be designing will be designed with homebrewers in mind, both for the beginner and avid brewer. One of the appeal of homebrewing is the opportunity to play around with the taste of one beers. Among homebrewers there is a variety in style and process. Some homebrewers prefer the do it yourself approach, where each equipment is assembled by the brewer. While other brewers prefer purchasing high quality equipment. Pan Fermenti will be design its equipment to allow both assembly option and pre-assembled option to meet these to customer group.

C. Regulatory restrictions
Breweries have to register with the FDA since it is considered a food facility. The FDA has permission to inspect the breweries facility, and registration as to be renewed biennially. The FDA has the power to suspend registration if the brewery could cause “adverse health consequences or death to humans or animals.”

By next December the FDA is looking at requiring that beers being served have nutritional information provided for the customers. This would add to the tests the breweries have to conduct due to the changes in their traditional brewing ingredients.

D. Significant trends
The rate at which sustainability is becoming the driving factor both for marketing and for energy and cost efficiency purposes. A move towards sustainable businesses is becoming more popular.

E. Growth rate
Craft brewing is growing rapidly. From January 2015 to June 2015, volume production by craft breweries had increased by 16 percent. The number of craft breweries had also increased by 699 breweries in June 2015 since the year before. At this point the Brewers Association were planning for another 1,755 breweries to open up. As the number of breweries grows, quality as well as

---

distinctiveness will be on the focus of the craft brewers. The market is growing and the room for innovation that adding bread to brewing introduces Pan Fermenti has a great future ahead of it.

The rate at which sustainability is becoming the driving factor both for marketing and for energy and cost efficiency purposes. A move towards sustainable businesses is becoming more popular.

**F. Barriers to entry and exit**

As the only company marketing this process, some barriers to entry would be credibility. Though similar processes are in place for recipe changes and there is no full scale process for reducing waste both from the ingredients to the brewing process itself in the market. This will be a challenge when it comes to marketing the designed process. Another potential barrier is start-up cost. Due to the research focus aspect of the design process, the base overnight cost for this company will be driven by quality testing equipment cost. Furthermore, because the product will be ingested the process as to be well sanitized, this will be another cost driver.

Just as these investment costs are barriers to entry they will also act as barriers to exit. The expenses are heavily dependent on research and development and this investment will have to be made to build credibility and to then enter the market. However, once the investment has been made exiting the market becomes a challenge, the enough licenses for the designed process will need to be sold before the company can exit the market. Along with this ensuring that employees, researchers and design engineers, are compensated appropriate when the company is pulling out of the market will be an added barrier. Selling equipment that company had invested in will be another obstacle, especially those designed specifically for the designed process.

**G. Key success factors in the industry**

The key to success in the brewing industry is unique taste and innovation. Among craft brewers innovations that adds to beer drinking experience and allows their customers to go on a new journey is praised and is what makes a craft brewer. Craft brewers love to explore new taste and process to make their brews more distinct. Although craft brewing is an industry separate from the big brewers, craft brewers do tend to compete on some level with the big brewing companies. Marketing a product that allows the breweries to stand apart from not just fellow craft breweries but also large breweries will allow for rapid success in the industry.

**H. Outlook for the future**

The initial start-up will be challenging and costly. It will be challenging to develop initial credibility, however once Pan Fermenti is able to show that its proposed product is credible and reliable the company’s unique spin on brewing provides good cause to proceed with entering the industry.
III. Business Strategy

A. Desired image and position in market

Our goal is to present a product that is both a sustainable alternative to the current model of brewing and to have an ultimately less expensive process. This could be lucrative to companies branding themselves as “organic” or “sustainable” compared to other breweries. Because of the nature of locally sourced waste bread, the industrial scale for brewing would also be limited to a local scale.

B. Company goals and objectives

1. Operational

The brewing process would have a reliable, consistent product from the waste bread supply. By the end of the process, any wastewater produced will be repurposed back into the design in either the form of water for fermentation or for heat circulation and cooling. Any additional equipment required for the brewing process will be minimally disruptive to current operations.

2. Financial

With the design, the cost of required materials for operation will be minimal. The majority of savings garnered from the process will be from the savings of material cost. The cost of imported grain will be alleviated by the substitution of barley and wheat with the donated bread. Additional costs may be invoked with the installation of the waste water treatment at the site. The design of the treatment will be made in such a way as to be competitive to current municipal standards, with operation costs kept to a minimum. The brunt of cost will derive from initial start-up of the wastewater site.

3. Other

The tenets of traditional brewing requires the minimal involvement of “unnatural” ingredients. GRBC in particular is recognized as the only USDA certified Organic Brewery in Michigan. This is due to their commitment to using only organic certified grains in their brewing production. To retain this certification, Pan Fermenti aims to use only organic bread and ingredients in its production. The process will also aim to minimize the use of chemicals during the brewing process.

C. SWOT analysis

1. Internal Strengths

The partnership between established businesses, bakeries and breweries, will create great publicity for both with little cost. Pan Fermenti aims to reduce food waste in the most local way possible, thus allowing opportunity for coordination between local industries. The simultaneous reduction of food waste and of material supply cost is both enticing and beneficial. These qualities could lead to LEED or organic certification for businesses while also driving down variable costs of production.
2. Internal Weaknesses
Pan Fermenti’s design is based upon an already large presence of bread for supply. Realistically, this requires breweries to stock up bread and store it over time to have a sufficient supply for grain substitution. The vast amount of bread necessary to make an industrial batch warrants it to be a seasonal brew. The storage and refrigeration needed for the bread would need to be resourced from existing facilities.

3. External Opportunities
With the local scope of Pan Fermenti’s design, several other potential sources of bread waste may open up. Potentially, grocery stores and restaurants can adequately supply breweries with bread for the design process. Changes in the perception of water usage in the U.S. could drive breweries to use less water-intensive brewing techniques. The image of a “green” company also has growing market value for environmentally-conscious consumers.

4. External Threats
Trust and tradition are strong ideals held within the brewing industry. The image of a product deriving from food waste, namely stale or thrown away bread, may cause initial reluctance of consumers and brewing companies; namely, this is in the form of doubt in achieving a high-quality beer with little to no bread aftertaste. The largest marketing obstacle Pan Fermenti faces is to overcome these concerns with data and experiments. Since Pan Fermenti currently has a monopoly on the consultation of breweries in using food waste as grain substitution, the design must prove to consumers that the idea is worth pursuing.

D. Competitive strategy

1. Cost leadership
The current price that our process would compete with is $1.09/lb of grain. If the total cost output of our product plus any additional enzymes or catalysts were under this target price, then the bread brewing process would be financially competitive. By having the bread being donated, the process would have a lower cost of production compared to other similar productions.

2. Differentiation
To date, there is no commercial brewery in the U.S. producing beer from bread food waste. The Pan Fermenti beer would be different in several aspects: the reliable, consistent taste and quality of the bread would match the standards of most commercial beers, but would also have the sustainable image over competitors.
IV. Company Products and Services

A. Description
Pan Fermenti offers consultation with brewing companies to incorporate bread waste into their existing beer products. This consultation involves the amending of existing facilities with additional equipment as necessary and the reduction of water usage during the process.

1. Product uniqueness
The focus of sustainability of grains in the brewing process has mainly been focused on spent grains after production. Pan Fermenti incorporates a design to focus on sustainability from the start. By using waste bread, any substitution cost for the grain supply becomes substantially reduced. Simultaneously, Pan Fermenti implements a design that’s environmentally friendly and economically practical.

2. Customer benefits
By obtaining a grain supply substitute that would be free, breweries would garner tremendous profit from savings. Additionally, the companies would begin relationships with other industries by the partnership of supplies.

3. Warranties and guarantees
Many brewers abide by the tenets of craft brewing, which involves using traditional ingredients as much as possible. However, the additional use of chemicals is necessary in sanitizing the facilities used for brewing. The addition of equipment with the Pan Fermenti process will inherently require more sanitization and maintenance. The warranty that Pan Fermenti will provide is for the process to be designed in such a way that complements existing facilities. Should malfunction or contamination occur, the additional equipment may easily be removable from existing equipment for treatment.

B. Trademark
The procedure used by Pan Fermenti for using waste bread in substitution of grains will be protected. However, the process of implementation will vary with each type of brewery. This consultation aspect of Pan Fermenti lends a view of protecting a “process,” rather than a “product.”

C. Future product or service offerings
There are further ways that Pan Fermenti could consult breweries in sustainable practices. However, it is currently out of the scope of the team to design and implement within a year’s timeframe. Eventually, Pan Fermenti hopes to advocate greater use of all types of food waste in the brewing process, with the possibility of other waste materials and recyclables. This may come in the form of a reduction material cost with the substitution of ingredients or in supplementary energy needed to fuel the brewing process.
V. Marketing Strategy

A. Target market
Breweries that are conscious of their environmental impact will be interested in Pan fermenti. By reducing bread waste and conserving water, Pan Fermenti offers environmentally conscious consultation backed with economic feasibility. More specifically, head brewmasters will be interested by the savings in their variable cost: the reduction of grains necessary for their wort. Mid-size breweries would work best with Pan Fermenti’s designs due to the size necessary for additional equipment while also incorporating ease of implementation in existing facilities.

B. Customers' motivation to buy
Thus far, only Brewery Vivant and Grand Rapids Brewing Co. lead the campaign of sustainable brewing in Michigan. Being the only LEED certified craft brewery, the motivations of Brewery Vivant and Pan Fermenti lie in tandem. With Grand Rapids Brewing Co., the material costs of grain and water intensity of the brewing process is well known. These breweries are symbolic of the larger problems that breweries are addressing: how to reduce material cost and water waste.
Pan Fermenti would persuade clients with a design that caters to these problems in a way that is sustainable. The image of sustainability would also act as a marketing point that these breweries could promote after the implementation of the design.

C. Market size and trends

1. How large is the market?
Pan Fermenti aims to consult existing breweries in implementing the design in their existing facilities. In Michigan, there are 159 craft brewers that produced 825,103 barrels in 2014.\(^6\) Nationally, Michigan is the 10th largest producer of beer by volume, while also ranking 6th in the number of craft brewers. Even nationally, the market for a substitution in grain supply is growing. In 2013, craft brewers had produced 21.7 million barrels. Pan Fermenti hopes to own at least 10 percent of the market share nationally. Nationally, there are about 3418 craft breweries in the United States as of 2014 and still growing, as shown in Figure 1.

2. Is it growing or shrinking? How fast?

Grand Rapids is one of the most rapidly growing cities in the U.S. in terms of beer production and quality. For numerous years, Grand Rapids has been ranked as the Best Beer Town by USA Today. This ranking is due to the strength of the craft breweries in the city. There are 17 craft breweries which includes Founder’s, one of the fastest growing craft breweries in the nation. The city reflects an overall trend in America of craft and microbreweries. The burgeoning brewing industry in America doesn’t appear to be slowing down any time soon. This allows for several opportunities for Pan Fermenti to collaborate locally with businesses.

D. Advertising and promotion

1. Message

The brewing process has been around for more than 2,000 years, yet the process itself has not changed much. With today’s innovative technologies in chemistry, mechanics, and computational software we can bring local micro-breweries into the twenty-first century. Grand Rapids is a city constantly growing in respect to craft brewing, a city filled with a talent for flavors and experimental tastes. Grand Rapids is quickly developing an experimental and contemporary environment which will outgrow its conservative craft brewing traditions. That said, there is a need

---

for innovation and methods to increase efficiency within the brewing process. Pan Fermenti plans to lead in helping local breweries and allow them ample room for different, daring brews. This will allow them to become more competitive in the market while respecting their traditional roots.

2. Media

Research from Mintel reports that sales from Microbreweries have doubled in the past five years and are on track to surpass $36 billion by 2019. Currently, the craft beer industry is a $20 billion business. Off-strategy marketing “is as unwelcome as a lukewarm can of Michaelob Ultra.” Hether Dueitt, the marketing manager at Coronado tells Forbes that “what does work is bringing the consumers into your marketing and making them feel like they are organically discovering your beers is the gold medal.” Understanding this, Pan Fermenti feels that it is appropriate to go about a similar strategy when promoting its process when it comes to the brewers. Since Pan Fermenti is selling a license for a unique and green process, a lot of promotional potential should be exploited in the beginnings of its success. As time drags on, the window of opportunity for this success diminishes.

In its beginnings, Pan Fermenti will focus on utilizing news agencies to promote their process. The Beer Project in Brussels did not spend on marketing their beer, Babylone (a beer made with 30% wt bread). However, multiple companies, breweries, and other firms are asking them to help develop a similar process. In the U.S., the USDA and EPA are joining with the private sector to set the nation’s first food waste reduction goals; they are calling for a 50% reduction of total food waste by 2030. Our new, hip, profitable, and green process would not only be able to sell itself but it will help bakeries contribute to food waste reduction and will allow them to be ahead of a potential food waste regulations. Understanding the project's goals, Pan Fermenti looked at long term marketing strategies which includes promoting in: Brewer Association Magazines, brewing forums, social media, website, and TV commercials.

3. Marketing Budget

_Brewer Association Magazines_: A full page ad in The New Brewer is $2100, this gets read by 30,000+ readers, there is a -15% discount for 6 issue commitment which is $1,785 per issue for a grand total of $10,710/year (every other issue per year). Assuming 30,000 readers a month the cost to reach one person is $0.06.

_Brewing Forums_: The Beer Advocate, a magazine which is equipped with its own popular online forum costs $2,590 for a full page ad for a 6 issue commitment. This magazine boasts an estimated monthly readership of +150,000 assuming this is constant each month it will cost $0.017 to reach each reader. This includes online forum advertising for $15,540/year. Advertising through

---


“The Beer Advocate” is the optimal choice as there are more people reached for a cheaper price, more magazines are circulated and we also get online advertising.

Social Media: Investment cost is free, but HR and marketing will be utilized for proper marketing

Website: The cost to host our own website is $70/year.

TV commercials: TV commercials will not be used to promote our process but to promote the mechanized Wort maker, the E-brew. By using TV commercials, the product can be directed to customers who may not be brewers due to cost of equipment and the many inputs and variables that typical homebrewers have to consider when brewing, but are interested in a good beer that is readily and easily available.

On average, production and purchasing a spot on local stations could cost $200 to $1,000, using a low budget agency for production, for a 30 second advertisement. To reach about 20,000 people through local CBS affiliate, the estimated cost is about $2,230 per month for 10 spots. This would make the annual cost about $26,760 for a spot with a relatively good reach. However, national prime time costs can range from $20,000 to $350,000 depending on which TV show it is playing after.

Pan Fermenti would consider investing $200 for a 15 second advertisement for production later in the company’s future to enlarge its customer base to those not already in the brewing community. At this point, the company would have significant growth and would be in place where the investment would be worthwhile. However, if the E-brew launches dramatically and sales in the brewing community is significant, this would be a path Pan Fermenti would consider sooner rather than later.

4. Plans for generating publicity

Pan Fermenti will generate publicity through governmental competitions sponsored by the EPA and USDA. Pan Fermenti will also look at connecting with local news outlets, these news outlets will be contacted upon successful implementation of our process at The Grand Rapids Brewery. Our hope is that once the connections between bakeries to brewery is established each will be able to sell products in a cyclic, renewable fashion. For example, the bakery will give GRB bread for production (for no cost). GRB then produces beer and offers the bakery a discount to sell the beer at their store. GRB may also be able to give the bakery spent grains to make a special type of bread which GRB can sell at their pub.

E. Pricing

1. Desired image in market
Pan Fermenti desires a positive, contemporary image. Pan Fermenti would like to represent the values discussed earlier in the proposal: stewardship, transparency, and trust. The company wants the customers both brewers and homebrewers to enjoy a high quality product at a competitive price.

2. Comparison against competitors’ prices
Since our process is unique, there are no comparisons on the market. However, price will be approximately 10 percent of the savings the company will generating by using Pan Fermenti’s process. For the mechanized wort maker, E-brew, some key competitors include Brewbot, which costs about $2,400, Picobrew, which costs $600, and the Brewie, which costs $2,271. Pan Fermenti will be marketing its product at $1000, which will be competitive compared to two of the products on the market.

3. Discount Policy
Discounts will be offered based on the size of the craft brewery. For smaller breweries, the capacity will be smaller, which would also reduce potential savings from implementing the process. Discounts will also be offered for future licensing as the company continues to fine-tune the process. Pan Fermenti will also promote discounts between the breweries and their suppliers (bakeries). This is to incentivize bakeries to give their bread to breweries at no cost.

F. Distribution strategy - Channels of distribution
Pan Fermenti will be marketing the product through Brewing Associating magazines and Forums, mainly its website. The website will be used mainly for the E-brew. The channels of distribution of the E-brew will through online retailers. The company will keep inventory close to the company location.

G. Test market results
Pan Fermenti can look at analytics provided by websites along with holding customer questionnaires to determine how much revenue comes in from advertising in The Beer Advocate and/or Brewer Association Magazines.
VI. Competitive Analysis

A. Existing competitors
Brewing with bread is a new practice in local Grand Rapids area, so there is no company around here consulting beer recipe/brewing method with bread. Thus, there are no competitors.

For the mechanized wort maker, E-brew, some key competitors include Brewbot, Picobrew, and the Brewie. These companies are all startup, as the industry for an electronic micro-brewery is quite new. Brewbot is a 21 person company that started in 2013 with a vision similar to ours to help alleviate the stress that comes with home-brewing. Picobrew started five years ago with two brothers also with vision of removing the frustration they encountered while brewing. Brewie, also a kick-starter, is a five person team with similar visions.

B. Potential competitors:
There are chance of establishment of other brewing consulting companies that might provide consultant on new brewing method or new brewing material. The entering of other brewing consulting company will break Pan Fermenti monopolization position in beer consulting market, and might lead to a drop on price of service and demand.

VII. Description of Management Team
The two most important departments for Pan Fermenti are Research & Development and Sales & Marketing. The research team will in charge of technical innovation, research, and develop the beer recipe and brewing process based on customer’s requirements. The sales and marketing team will in charge of making business movement, market strategy, and customer services for the company.

A. Key managers and employees

1. Background:

a. Business (Sales and Marketing department)
Marketing managers must have a bachelor’s degree in marketing or business administration and 5+ years experience in marketing, advertising, brand management or sales. Marketing managers must have strong communication, sales, and presentation skills. Expert knowledge of current marketing trends and multimedia platforms is essential. They must have strong leadership skills and the ability to hire, train and motivate team members. Marketing managers should also have strong budgeting, Internet and computer skills.

b. Technology (research and development department)
Bachelor degree in engineering or chemistry is required for Research Engineers. They will also apply their expertise and knowledge to technical projects, finding innovative, cost-effective means to improve research, techniques, procedures, and/or products and technologies. Responsibilities include developing, conducting, and evaluating new approaches to meet project objectives faster and more efficiently.

2. **Resumes of key managers and employees (suitable for an appendix)**

Current key players in this company include the chemical engineer, Michael Schur, an expert chemist, skilled at making appropriate guesses in order to fine tune recipe changes to accommodate demand. For equipment design, Pan Fermenti will employ mechanical engineers, Hanfei Niu and Ayo Ayoola, with the necessary knowledge to design for thermal control issues that play a big role in brewing as well as mechanizing the process for efficiency. In addition, the company will be utilizing Jerome Navarro’s expertise in the area of process design necessary for updating the breweries process to accommodate the recommended changes. Resumes are appended.

**VIII. Operation**

**A. Ownership**

The legal form of ownership of Pan Fermenti will be a partnership. This is because it is relatively simple and inexpensive to establish and maintain compared with other form of ownership. Since Pan Fermenti’s primary market when it starts is the local market around Grand Rapids, the company size will be small and partnership works well for small business. It gives company more freedom on legal structure as company develop and also more freedom from external regulations.

**B. Company structure (organization chart)**

A hierarchal map can be seen in Figure 2.

![Hierarchal company structure for Pan Fermenti](image)

**Figure 2. Hierarchal company structure for Pan Fermenti**
C. Decision making authority
Pan Fermenti will use a democratic process for decision making. Each partner can present alternatives and share concerns during the process, then all partners are required to vote in one direction or the other. The proposal that wins majority vote will be practiced.

D. Significant compensation and benefits packages
The benefits will be provided to employees are retirement Incentive Savings Plan (RISP), retirement plan, social security, state disability insurance (SDI), educational reimbursement.

E. Facilities:

1. Location: where and rationale
The company will be located in rural area of Grand Rapids, where the fixed cost is relatively inexpensive compare with downtown area. Pan Fermenti will be providing consultant services, thus the location is ultimately not important.

2. Layout: type and rationale
The most important area where most of the experiment, research, and testing will be done is research lab. Thus, the lab take the most space of the company. The next largest is employee's working area for all the department. Since Pan Fermenti is a small local business, there won’t be a great need for space. The customer meeting room is for meeting and presenting solutions to the customers. The resting area contains refreshment, and drink and dining utensils, where employees can rest and having lunch. The configuration can be seen in Figure 3.

![Figure 3. Layout of company](image)
3. Possible setup constraints

The temperature of the fermentation in brewing process is crucial. Thus the temperature for research lab, where the most chemical experiment and brewing testing batch will happen, needs to be well controlled.

IX. Finance

A. Financial Forecasts (suitable for an appendix)

1. Key assumptions

Demand

The financial forecast assumes a market size of approximately 3,000 breweries, and 1.5 million homebrewers. Pan Fermenti is look at an annual production volume of about 10,000 units for the mechanized wort maker and selling approximately 164 licenses for its brewing process.

Savings from product

Pan Fermenti is assuming that the process will save the companies approximately $300 per batch, with most craft breweries at capacity range from 500 batches to 1,500 batches annually. We are also assuming that the process will be used seasonally, for the length of 3 to 6 months, when bread can be easily provided to the breweries. The breweries could save from $75,000 to $225,000. The breweries will be willing to pay about 10% of the savings provided with the new process for the price of the license on the process. Pan Fermenti will be selling the licenses at a rates dependent on the brewery size. However, for the purpose of these financial calculations, 96% will represent the smaller breweries and 4% will represent the large, this would put average price at $8,092 per license. The licenses will be renewed annually.

Personnel cost

The cost of labor will be for research and development $80 per hour, including all benefits. The research and development team will be made up of 4 personnel. Labor cost for building mechanized wort maker will be $30 per hour, also including benefits. The build team for the mechanized wort maker, E-brew, will be made up of 50 employees. In addition, one unit will take about 10 minutes for pre-assembled wort maker, and 4 minutes for assembled require unit.

Batch cost

Pan Fermenti will have the capabilities of running up to five 5-gallon batches simultaneously. Initial purchasing equipment cost is $629 per batch capability annually, fixed cost. The annual

---

maintenance cost will about $125.80 per batch capability, assuming maintenance costs about 20 percent of the equipment cost. **Table 2** shows the equipment cost break-down for 5 gallon batches.

**Table 2**: Equipment Cost Breakdown

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Unit cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Gallon brew kettle</td>
<td>209</td>
</tr>
<tr>
<td>Burner</td>
<td>50</td>
</tr>
<tr>
<td>Wort Chiller</td>
<td>70</td>
</tr>
<tr>
<td>Lauter/Mash</td>
<td>130</td>
</tr>
<tr>
<td>Sanitizer</td>
<td>10</td>
</tr>
<tr>
<td>5 gallon Carboy</td>
<td>40</td>
</tr>
</tbody>
</table>

For 5 gallon batches, Pan Fermenti will be using 2 lbs grains, 0.2 ounces of hops, and 1.5 grams of yeast. The ingredient cost per batch will about $2.265 per batch. **Table 3** shows the ingredient per batch cost breakdown. Pan Fermenti will be able to run 60 batches annually, at max capacity. These costs would be for further research and improving the licensed process.

**Table 3**: Ingredient Cost Breakdown

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Unit cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains ($/pound)</td>
<td>0.91</td>
</tr>
<tr>
<td>Hops ($/ounce)</td>
<td>2.00</td>
</tr>
<tr>
<td>Yeast ($/gram)</td>
<td>0.03</td>
</tr>
</tbody>
</table>
Build and Test Equipment

Equipment, including purchasing and installation cost, will be about $100,000 for 2 production lines. Equipment used for testing product in the research lab was estimated to cost about $100,000. The breakdown cost for the equipment is shown in Table 4.

Table 4: E-brew Cost Breakdown

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Cost per unit ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheet metal (Carbon fiber (3m³))</td>
<td>66.00</td>
</tr>
<tr>
<td>Induction heating plate</td>
<td>95.00</td>
</tr>
<tr>
<td>Chiller</td>
<td>40.00</td>
</tr>
<tr>
<td>Electronic components</td>
<td>200.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>401.00</strong></td>
</tr>
</tbody>
</table>

Building and Additional cost

This proposal is assuming about 21,000 square foot at $3.75 per square foot for initial cost and about $15,750 for maintenance, which includes utilities cost. In addition, patent and licensing cost is approximately $3,000.16

Interest Rates

Due to the high risk of the investment into a consulting company like this, the first of its kind, Pan Fermenti is assuming a 15% minimum attractive rate of return.

1. Financial statements

Detailed information for cash flows can be found in the projected financials in the appendix.

C. Break-even analysis

The calculations for the break-even analysis can be found in detail in the appendix. 88% of total revenue is from the E-brew, and 12% is from the license. The break-even price point was calculated to about $540.90 per unit for the E-brew and $4,497.62 per license. At the price at $1000 per unit, the break-even unit sales volume is 5,409 units of the 10,000, for the E-brew. At the price of $8,000 per license the break-even unit sale is 92 licenses of the 164.

D. Ratio analysis

The ratio analysis is used to determine the profitability and viability of the company. The gross margin for year 1 is 7,212,377, for year 2 is 8,480,368, for year three is 9,651,902. Profit margin for year 1 is 3.8%, year 2 is 5.6%, and year 3 is 10.13%. There is consistent growth from year to year and therefore will be able to pay off debt, and invest in future growth. The total assets turnover for year 1 is 11.34, for year 2 is 11.5 and for year 3 is 15.03. The turnover ratio is an efficiency ratio and shows how effectively inventory is managed. The ratio for Pan Fermenti is constantly increasing, and therefore suggests an increase of efficiency in inventory management. Lastly, the debt equity ratio was calculated to be 52% for year 1, 45% for year 2 and 41% for year three. These values indicate how debt is being handled; a decrease shows that debt is being reduced which reduces the company's risk during debt repayment.

X. Loan or Investment Proposal

A. Amount requested – Equity and/or Debt

For invested capital, Michael Schur (Research and Development Engineer) has a wealthy uncle who recently passed away giving him $200,000, Hanfei Niu (Development Engineer) has wealthy parents back home in China, rooting for her success, and has given her a gift $300,000 to be invested into the company, Ayo Ayoola (Product Engineer) reached into her savings account and invested $2,000. Pan Fermenti also did initial crowd funding and received $150,000.

B. Purpose and uses of funds

The funds would be used in order to facilitate research and development for Pan Fermenti’s design. This would also go into the production and implementation of additional equipment necessary for the design. Invested capital would lead Pan Fermenti to establish a foothold in the consultation industry by producing a working prototype for the brewing process. This would also be used to rent infrastructure and laboratory equipment necessary for research. Pan Fermenti would also be able to purchase testing equipment necessary for water sanitation and the brewing automation process.

C. Exit Strategy

The sale of research equipment and hardware would lead to easy liquidation of assets. The facility used for research would also be sold in the event of repayment. Invested and retained income in Pan Fermenti’s accounts can be used as a current reimbursement or collateral to leverage against debts, deficits, and liabilities owed. Receivable incomes would be delegated to severance pay for the employees of Pan Fermenti.
D. Timetable for implementing plan and launching the business

Within five months, Pan Fermenti hopes to establish a headquarters for research and development while networking with clientele. A month would be devoted to each brewery for field research of existing facilities, while also communicating with workers about their workplace culture. This is in order for Pan Fermenti to apply a holistic solution that operates in harmony with the way the business operates. Design, construction, and revision will take six months. Overall, the initial process will be expected to take a year. Looking forward, lean management and total quality management practices will be considered in order to reduce process cycle time.
XI. Appendices

Table A.1: Administrative cost

<table>
<thead>
<tr>
<th>Title</th>
<th>Salary ($/year)</th>
<th>Benefits (60%)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>President</td>
<td>$150,000.00</td>
<td>$90,000.00</td>
<td>$240,000.00</td>
</tr>
<tr>
<td>Research &amp; Development Engineer</td>
<td>$100,000.00</td>
<td>$60,000.00</td>
<td>$160,000.00</td>
</tr>
<tr>
<td>Engineer</td>
<td>$70,000.00</td>
<td>$42,000.00</td>
<td>$112,000.00</td>
</tr>
<tr>
<td>Chemist</td>
<td>$50,000.00</td>
<td>$36,000.00</td>
<td>$86,000.00</td>
</tr>
<tr>
<td>Nutritionist</td>
<td>$50,000.00</td>
<td>$30,000.00</td>
<td>$80,000.00</td>
</tr>
<tr>
<td>Sales &amp; Marketing Manager</td>
<td>$40,000.00</td>
<td>$24,000.00</td>
<td>$64,000.00</td>
</tr>
<tr>
<td>Product Engineer</td>
<td>$90,000.00</td>
<td>$54,000.00</td>
<td>$144,000.00</td>
</tr>
<tr>
<td>Product Development Engineer</td>
<td>$90,000.00</td>
<td>$54,000.00</td>
<td>$144,000.00</td>
</tr>
<tr>
<td>Project Manager</td>
<td>$40,000.00</td>
<td>$24,000.00</td>
<td>$64,000.00</td>
</tr>
<tr>
<td>Marketing</td>
<td>$39,000.00</td>
<td>$23,400.00</td>
<td>$62,400.00</td>
</tr>
<tr>
<td>Customer Service</td>
<td>$38,000.00</td>
<td>$22,800.00</td>
<td>$60,800.00</td>
</tr>
<tr>
<td>Human Resources</td>
<td>$50,000.00</td>
<td>$30,000.00</td>
<td>$80,000.00</td>
</tr>
<tr>
<td>Chief Financial Officer</td>
<td>$115,000.00</td>
<td>$69,000.00</td>
<td>$184,000.00</td>
</tr>
<tr>
<td>VP of Engineering</td>
<td>$115,000.00</td>
<td>$69,000.00</td>
<td>$184,000.00</td>
</tr>
<tr>
<td>Technical worker (50)</td>
<td>$1,500,000.00</td>
<td>$900,000.00</td>
<td>$2,400,000.00</td>
</tr>
<tr>
<td>Total</td>
<td>$2,547,000.00</td>
<td>$1,528,200.00</td>
<td>$4,075,200.00</td>
</tr>
</tbody>
</table>
Table A-2: Income Statement

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales revenue</td>
<td>11,312,000</td>
<td>13,469,440</td>
<td>15,495,680</td>
</tr>
<tr>
<td>Variable Cost of Goods Sold</td>
<td>4,010,000</td>
<td>4,812,000</td>
<td>5,614,000</td>
</tr>
<tr>
<td>Fixed Cost of Goods Sold</td>
<td>40,262</td>
<td>50,262</td>
<td>59,085</td>
</tr>
<tr>
<td>Depreciation</td>
<td>49,361</td>
<td>126,810</td>
<td>170,693</td>
</tr>
<tr>
<td>Gross Margin</td>
<td>7,212,377</td>
<td>8,480,368</td>
<td>9,651,902</td>
</tr>
<tr>
<td>Variable Operating Costs</td>
<td>2,500,000</td>
<td>2,800,000</td>
<td>3,100,000</td>
</tr>
<tr>
<td>Fixed Operating Costs</td>
<td>1,769,700</td>
<td>1,769,700</td>
<td>1,769,700</td>
</tr>
<tr>
<td>Operating Income</td>
<td>2,942,677</td>
<td>3,910,668</td>
<td>4,782,202</td>
</tr>
<tr>
<td>Interest Expense</td>
<td>750,000</td>
<td>1,125,000</td>
<td>300,000</td>
</tr>
<tr>
<td>Income Before Tax</td>
<td>2,192,677</td>
<td>2,785,668</td>
<td>4,482,202</td>
</tr>
<tr>
<td>Income tax (40%)</td>
<td>877,071</td>
<td>1,114,267</td>
<td>1,792,881</td>
</tr>
<tr>
<td>Net Income After Tax</td>
<td>1,315,606</td>
<td>1,671,401</td>
<td>2,689,321</td>
</tr>
</tbody>
</table>

Table A-3: Cash Flows Statement

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning Cash Balance</td>
<td>-</td>
<td>11,671,564</td>
<td>8,174,351</td>
</tr>
<tr>
<td>Net Income After Tax</td>
<td>1,315,606</td>
<td>1,671,401</td>
<td>2,689,321</td>
</tr>
<tr>
<td>Depreciation expense</td>
<td>49,361</td>
<td>126,810</td>
<td>170,693</td>
</tr>
<tr>
<td>Invested Capital (Equity)</td>
<td>652,020</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Increase (decrease) in borrowed funds</td>
<td>10,000,000</td>
<td>(5,000,000)</td>
<td>(6,000,000)</td>
</tr>
<tr>
<td>Equipment Purchases</td>
<td>(345,424)</td>
<td>(295,424)</td>
<td>(265,424)</td>
</tr>
<tr>
<td>Ending Cash Balance</td>
<td>11,671,564</td>
<td>8,174,351</td>
<td>4,768,941</td>
</tr>
</tbody>
</table>
### Table A-3 Break Even Analysis

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales revenue</td>
<td>11,312,000</td>
<td>13,469,440</td>
<td></td>
</tr>
<tr>
<td>Less: Variable Costs:</td>
<td></td>
<td></td>
<td>15,495,680</td>
</tr>
<tr>
<td>Variable Cost of Goods Sold</td>
<td>4,010,000</td>
<td>4,812,000</td>
<td></td>
</tr>
<tr>
<td>Variable Operating Costs</td>
<td>2,500,000</td>
<td>2,800,000</td>
<td>5,614,000</td>
</tr>
<tr>
<td>Total Variable Costs</td>
<td>6,510,000</td>
<td>7,612,000</td>
<td>3,100,000</td>
</tr>
<tr>
<td>Contribution Margin</td>
<td>4,802,000</td>
<td>5,857,440</td>
<td>8,714,000</td>
</tr>
<tr>
<td>Less: Fixed Costs</td>
<td></td>
<td></td>
<td>6,781,680</td>
</tr>
<tr>
<td>Fixed Cost of Goods Sold</td>
<td>40,262</td>
<td>50,262</td>
<td></td>
</tr>
<tr>
<td>Fixed Operating Costs</td>
<td>1,769,700</td>
<td>1,769,700</td>
<td>59,085</td>
</tr>
<tr>
<td>Depreciation</td>
<td>49,361</td>
<td>126,810</td>
<td>1,769,700</td>
</tr>
<tr>
<td>Interest Expense</td>
<td>750,000</td>
<td>1,125,000</td>
<td>170,693</td>
</tr>
<tr>
<td>Total Fixed Expense</td>
<td>2,609,323</td>
<td>3,071,772</td>
<td>300,000</td>
</tr>
<tr>
<td>Income Before Tax</td>
<td>2,192,677</td>
<td>2,785,668</td>
<td>2,299,478</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Fixed Costs</td>
<td>2,609,323</td>
<td>3,071,772</td>
<td>2,299,478</td>
</tr>
<tr>
<td>Contribution Margin %</td>
<td>42%</td>
<td>43%</td>
<td>44%</td>
</tr>
<tr>
<td>Break Even Sales Volume</td>
<td>6,146,743</td>
<td>7,063,675</td>
<td>5,254,151</td>
</tr>
<tr>
<td>Break Even Sales Unit Volume - Ebrew</td>
<td>5,409</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Break Even Sales Unit Price - Ebrew</td>
<td>540.91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Break Even Sales Unit Volume - License</td>
<td>4,497.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Break Even Sales Unit Price - License</td>
<td>92</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table A-4: Equipment Depreciation

<table>
<thead>
<tr>
<th>Equipment Purchases</th>
<th>Purchases</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>345,424</td>
<td>49,361</td>
<td>84,594</td>
<td>60,415</td>
</tr>
<tr>
<td>Year 2</td>
<td>295,424</td>
<td>42,216</td>
<td>72,349</td>
<td></td>
</tr>
<tr>
<td>Year 3</td>
<td>265,424</td>
<td></td>
<td>37,929</td>
<td></td>
</tr>
<tr>
<td>MACRS Rates (7-year recovery period)</td>
<td>0.1429</td>
<td>0.2449</td>
<td>0.1749</td>
<td></td>
</tr>
</tbody>
</table>

### Table A-5: Debt Account

<table>
<thead>
<tr>
<th>Interest Expense:</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual interest rate on debt</td>
<td><strong>15%</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average debt balance</td>
<td>5,000,000</td>
<td>7,500,000</td>
<td>2,000,000</td>
</tr>
<tr>
<td>Interest expense</td>
<td>750,000</td>
<td>1,125,000</td>
<td>300,000</td>
</tr>
</tbody>
</table>
Resumes

President – Jeremiah VanAntwerp Ph.D.
Education: Ph.D Chemical Engineering
Skills: Leadership, the ability to recognize and confront complacency and false urgency, make hard decisions/change, able to recognize leadership, able to win hearts and minds, optimistic and celebrate small wins
Experience: Professor of Engineering for 10 years
Activities: Mentor, Enjoys ruining the youth development center

VP of Engineering – Donald McDonald
Education: Masters in Engineering, MBA
Skills: Communication, creativity, adaptability, good at collaborating with others, good at managing engineers, understands engineering theories and concepts, organization must be phenomenal
Experience: 3 years of R&D Engineering, 2 years as Head of Product Development
Activities: Enjoys eating burgers, raising cows on small farm, creating products from 3-D printer

Head of Product Development – Hanfei Niu
Education: Bachelors of Science - Mechanical Engineering
Skills: Evaluates production process, gathering internal and external feedback to identify potential problems and improvements, using design tools to develop technical specs, generating test plans.
Experience: 1 years as Design Engineer Intern
Activities: Likes to study ancient martial arts, draw, and enjoys making chemicals with her organic chemistry set

Head of Research and Development – Michael Schur
Education: Bachelors of Science- Chemical Engineering/ Chemistry
Skills: Conducts research, apply research theories principles and models to conduct experiments, leads and directs work of others, reports to top manager.
Experience: 2.5 years as Design/Process and Research Engineering
Activities: Enjoys reading poetry, playing the piano, and volunteering at orphanages

Head of Product Engineering - Ayooluwa Ayoola
Education: Bachelors of Science - Mechanical Engineering
Skills: Evaluates production process, gathering internal and external feedback to identify potential problems and improvements, using design tools to develop technical specs, generating test plans.
Experience: Product Design Engineer - Intern - 1 year
Activities: Enjoys to study medicine, reading, and writing

Sales and Marketing Manager - Jerome Navarro
Education: Bachelors of Science - International Civil and Environmental Engineering
Skills: Analysis, Manage risk, Adaptable to learning new technology, Manager, Conflict Resolution
Experience: 1 years as financial manager and engineering internship
Activities: Enjoys hiking, adventures, hosting parties, volunteering at the zoo to take care of Chang a baby panda