Competitive Forces Framework for New Entrant:

The Case of Canadian Pea Starch in Chinese Market

by

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Abstract

Based on the Five competitive Forces Model of Porter (2008), and the practical case analysis on Canadian pea starch in the Chinese market, this study builds up a theoretical framework for a new entrant (also as a substitute) to analyze industry competition and provides strategic suggestions for the new entrant to shape a competitive position. In this study, Porter's (2008) model is first preliminarily modified to be used for new entrants' analysis. Then two-phase interviews are conducted with Chinese food processors to understand Chinese buyers' attitudes towards Canadian pea starch and to identify their concerns. Subsequently, in-depth interviews are carried out with Canadian pea starch suppliers to match customer demand and supplier capability, followed by a five-forces analysis to assess industry competition facing by Canadian pea starch in the Chinese market. Afterwards, the previously modified competitive forces framework is enriched by illustrating positive/negative effectiveness of all five forces and by adding evaluation metrics for each force.

This study has academic value. It customizes and enriches a Five Competitive Force Model to be applicable of analyzing market potential of a new entrant. It provides a theoretical base to create strategies for a new entrant (also as a substitute) to shape its competitive position. Also, it addresses the gap in competitive analysis of agricultural exports by matching customer demand and supplier capability. This applied research adds to the industry understanding of the market need and contributes to Pulse Canada's "25 by 25" strategy and Canada's Protein Industries Supercluster.

Keywords: Five Competitive Forces, Competition, Competitiveness, New Entrant, Canadian pea starch, Chinese market

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Chapter 1 Problem Setting and Objectives

1.1 Introduction

Plant proteins are gaining market share because of sustainability concerns, climate change and greater life-style consciousness. This growth trend has gained the Canadian government's attention. The Protein Industries Supercluster, one of Canada's five Innovation Superclusters Initiative, aims to position Canada as a global source of high-quality plant protein and plant-based co-products (Protein Industries Canada, n.d.). The industry association, Pulse Canada, is striving to create new demand use categories for 25% of the industry's productive capacity by the year 2025 (Pulse Canada, n.d.).

The growing demand for pulse-based products is spurring the need for pea protein. Pea extraction capacity in Canadian Prairies expanded rapidly in 2020-2021, with the opening of two new pea extraction facilities. Table 1 shows the location of seven pea fractionation plants that are operating in Canada. Most notably, Roquette Canada Ltd., with more than 600 million CAD invested, has opened the world's largest pea protein extraction plant, at Portage La Prairie, Manitoba in 2020. It can process 125,000 metric tonnes of yellow peas annually (Roquette, 2020; Roquette, 2021).

Table 1 Pea Fractionation/Extraction Plants in Canada

Company	Processing Capacity	Isolate/Concentrate	Location
La Vita Canada	Not available	Isolate	AB
Nutri-Pea Ltd.	Not available	Isolate	MB
Parrheim Foods	Not available	Concentrate	SK
Agrocorp Processing Ltd.	30,000 tonnes pulses/year	Concentrate	SK
Verdient Foods Inc	Expected over 160,000 tonnes pea/year	Concentrate	SK
Roquette Canada Ltd.	125,000 metric tonnes pea/year	Isolate	MB
Merit Functional Foods	20,000 tonnes of pea and canola/year	Isolate	MB

Source: combined information from Pulse Canada, news, and company websites

Note: Canadian pea fractionation/extraction plants included are those companies who have at least one pea starch processing facility located in Canada, no matter its origin is Canada or not. Especially, pea processing facilities who only produce pea flours, but not concentrated/isolated pea starch are excluded.

Canada is the largest dry pea producer in the world. In 2019, Canada produced about 30% of the global dry pea production, even more than the second (Russia) and the third (China)

combined (Table 2). And 86% of Canadian dry peas are exported in the form of whole peas or split peas. Most dry peas are grown in Saskatchewan, Alberta, and Manitoba. Table 3 shows the production of dry peas in Canada for 2019.

Table 2 The World's Top 10 Dry Pea Producers (2019)

Rank	Area	Quantity: (tonnes)	Percentage
1	Canada	4236500	29.87%
2	Russian Federation	2369479	16.71%
3	China*	1458858	10.29%
4	United States of America	1013600	7.15%
5	India	811690	5.72%
6	France	709380	5.00%
7	Ukraine	573040	4.04%
8	Ethiopia	390564	2.75%
9	Germany	228200	1.61%
10	Romania	220420	1.55%

Source: FAO (The United Nations Food and Agriculture Organization)

Note:
① * The data source calculates the dry pea production for China repeatedly, showing as China (Area code: 351) and China, mainland (Area code:41), both 1458858 tonnes. Table 2 is the result after the researcher deleting one of the repeated data.
② Data of 2019 is the latest dry pea production data available on FAO.
③ Based on FAO, the export quantity of dry pea in 2019 is 3635670 tonnes, then 85.82% of Canadian dry peas are exported.

Table 3 Dry Pea Production in Canada (2019)

Province	Production (metric tonnes)	Percentage	AGR
Newfoundland and Labrador	0	0.00%	0.00%
Prince Edward Island	4300	0.10%	27.91%
Nova Scotia	0	0.00%	0.00%
New Brunswick	300	0.01%	0.00%
Quebec	4200	0.10%	19.05%
Ontario	8000	0.19%	30.00%
Manitoba*	163900	3.87%	36.06%
Saskatchewan*	2313100	54.60%	23.02%
Alberta*	1685900	39.79%	4.60%
British Columbia	57000	1.35%	-30.53%
Total	4236700	100.00%	15.48%

Source: Statistics Canada

Note:
① * Canadian Prairies Province
② Data of 2019 is used to avoid the uncommon production during COVID-19 in the year 2020. And data of 2019 is the most updated data followed by data of 2020.

Although China ranks third in the global pea production in 2019 (Table 2), domestic pea production is insufficient to supply enough pea starch for the traditional vermicelli industry. China is the largest importer of Canadian dry peas, accounting for 56% of total exports in 2019 (Table 4). According to the vermicelli industry, the quality traits of Canadian yellow peas account for this import pattern. A great proportion of Canadian dry peas are processed to extract pea starch in China, as the raw material for the Chinese vermicelli producers.

Table 4 Top 10 Importer of Canadian Dry Pea (2019)

Rank	Country	Quantity: (KGM)	Percentage
1	China	2026666095	55.81%
2	Bangladesh	672551320	18.52%
3	United States	212484411	5.85%
4	India	206968867	5.70%
5	Nepal	127803820	3.52%
6	Cuba	77249250	2.13%
7	United Arab Emirates	58249622	1.60%
8	Colombia	48306583	1.33%
9	Philippines	30141494	0.83%
10	Pakistan	14208020	0.39%

Source: Statistic Canada

Note: Data of 2019 is used to avoid the uncommon import quantity during COVID-19 in the year 2020. And data of 2019 is the most updated data followed by data of 2020.

According to one concentrated pea starch supplier interviewed, normally, what they get from their processing are 50-60% starch, 17%-25% fiber and only 15-20% of the product is protein. While for one isolated pea starch plant involved, the output proportions of their pea processing process are 75-77% pea starch, 13-15% protein and 8-10% fiber. As a co-product of pea protein, the supply of pea starch will increase sharply, as more peas are processed for protein extraction. Profitable markets for this increasing supply of pea starch are a concern for the Canadian pulse industry. The current export markets for Canadian pea starch are the U.S. and Mexico, mainly consumed by pet food industry and feeds industry.

At one time, the protein was regarded as the secondary product for the Chinese pea processors production, now it is an important part of their business, because it is profitable. Chinese pea processing companies now import more Canadian yellow peas to get more pea protein. Most of the pea protein extracted in China is re-exported to North America, mainly for sale in the US market. Around ten Chinese pea processing companies[1] are capable of pea protein extraction. They import yellow peas from Canada and process the raw material into pea starch, pea protein and pea fiber.

Almost all the Chinese pea starch is consumed in the domestic market, either self-consumed or sold to other vermicelli processors across the country. Many Chinese vermicelli

[1] Source: ① Trade Commissioner Service, (2020, June 9), *Doing Business in China* (Webinar) ②Compiled with information from company websites, News

processors choose to purchase pea starch from those domestic suppliers rather than process whole peas themselves, because the cost is almost the same. Given the predominance of vermicelli consumption, China is regarded as the most promising export market for Canadian pea starch.

In addition to vermicelli, pea starch is mainly used in making pea cake and vermicelli in China, according to a Canadian pea starch expert interviewed. In addition, pea starch has potential uses in animal food, gummies, extruded snack, meat products, etc. Although the applications of pea starch in these industries are relatively new in China, they could absorb a lot of Canada's excess supply. It is essential to understand how Chinese food processors view the role for Canadian pea starch in the Chinese market. Many extant studies related to pea starch investigated the properties, processing technologies and applications of pea starch. This is the first academic research to examine the market potential of pea starch based on qualitative customer analysis.

Many studies have examined the competitive advantages of agri-food exports. Although the importance of analyzing a country's agriculture export performance from a customer-oriented perspective is recognized (Bossleet al., 2015; Yusuf & Trondsen, 2013; Yusuf & Trondsen, 2014), they do not investigate the competitive performance of agricultural products in export markets from a matched-unmatched perspective. Although the Five Competitive Forces framework of Porter (2008), introduces a method to analyze industry competition structure and thereby suggesting strategies to gain competitive advantage, it is from the perspective of an incumbent.

1.2 Research Problem, Objective of Research

Given the potential applications of pea starch from previous literature and that China is expected to be a key market for imported Canadian pea starch, this thesis investigates the market potential of Canadian pea starch based on Chinese buyers' attitudes and perceptions. The study examines competition structure facing Canadian pea starch that leads to its market potential and competitive position in the Chinese market. The following questions frame the analysis:

(1) Whether, or not, Canadian pea starch is widely used in China, and why?
(2) Are Chinese food producers interested in trying Canadian pea starch?
(3) Why might Chinese food producers refuse to try Canadian pea starch?
(4) What factors do Chinese food processors care about if they decide to try Canadian pea starch?

(5) How well do Canadian pea starch suppliers satisfy Chinese customers' demands raised in Question 4?
(6) How do five competitive forces affect Canadian pea starch's industry competition structure?

In this thesis, multi-phase telephone interviews with Chinese food processors are first conducted to assess whether Canadian pea starch is widely used in China, whether Chinese customers are willing to try Canadian pea starch, and what factors do Chinese buyers consider. With all customer data collected and summarized, in-depth interviews with Canadian pea starch suppliers are then carried out. This is followed by the matching analysis between Chinese customers' demands and Canadian suppliers' ability to serve those demands. After that, the pre-modified competitive forces model based on Porter's (2008) is adopted to analyze competition facing by Canadian pea starch in the Chinese market. Subsequently, with this practical case analysis, the pre-modified competitive forces model is further enriched and provides a theoretical base to do competitive forces analysis from the perspective of a new entrant (also as a substitute) and to devise strategies for the new entrant to gain competitive position.

No studies found in the literature provide knowledge about the market potential of pea starch based on qualitative customer analysis. None of the extant studies analyze the competitive performance of agricultural products in export markets by doing a match between customer demand and supplier capability. Although the Five Competitive Forces framework of Porter (2008), introduces a method to analyze industry competition and provide suggestions for strategies, it is from the perspective of an incumbent. Also, it does not address whether the five forces affect competition positively or negatively and does not include their evaluation metrics. No competitive analysis has specifically examined Canadian pea starch from the perspective of a new entrant. This study aims to fill these gaps and help the Canadian pea starch industry better understand the Chinese market and strengthen their competitiveness.

1.3 Overview of Thesis

The thesis is organized as follows. Chapter 2 presents previous studies related to footloose industry, joint product, pea starch, and agri-food export competitive analysis. Also, the pre-modified theoretical framework based on Porter's (2008) Five Competitive Forces Model, is introduced. Chapter 3 introduces the research method employed in this thesis, including rationale

and benefits of grounded theory approach, process to collect data, technique to gain access and make rapports, and explanation for the sampling.

Chapter 4 presents the results of the interviews, mainly in description and analysis of participants' responses. The causes of Canadian pea starch's unpopularity in China and reasons why some food producers refuse pea starch are presented. Chinese food producers' attitudes towards Canadian pea starch and the factors they consider to be important are summarized. A matching between Chinese customers' demand and Canadian suppliers' capacity is undertaken. With the above data, an analysis is carried out to demonstrate industry competition facing by Canadian pea starch in the Chinese market, by using the pre-modified competitive forces model presented in Chapter 2.

Chapter 5 discusses the enriched theoretical framework built up for competitive forces analysis of new entrant. Finally, Chapter 6 concludes the study, with brief statement of the modified theoretical model and with frank assessment of the market potential of Canadian pea starch in the Chinese market. An indication of the academic contribution and implications for the industry, followed by limitation of this study are presented, with some suggestions for further study.

Chapter 2 Literature Review

2.1 Footloose Industry

A footloose industry can either locate near to the raw material source, near to consumer markets, or anywhere between (Hoover, 1948, as cited in Prentice, 2019). Food processing companies with processes that neither gain weight, nor lose weight, are regarded as footloose companies (Connor & W. Schiek, 1997; Henderson & McNamara, 2000). Just like canola seed processing industry (Prentice, 2019), pea processing industry has footloose attributes. When dried peas are processed, they yield pea starch, pea protein, and pea fiber that involves little weight loss, from the perspective of total outputs.

As discussed earlier, China is the biggest pea starch consumer globally. Except for the existing dominant vermicelli industry, other applications are relatively new but promising. Thus, the excessive Canadian pea starch in the near future is assumed to be transported to China. As discussed earlier, the United States is the dominant consumer for pea protein and the demand is increasing. Canadian pea protein is assumed to send to its next-door neighbor. Figure 1 shows the assumed pea products supply chain. In this case, pea starch from Canada to China is the only long-distant flow.

Figure 1 Canadian Pea Products Supply Chain (Assumed)

However, the current pea products supply chain is a different story. Figure 2 illustrates the current Canadian pea products supply chain, the majority of Canadian dried peas are transported to China, then processed to pea starch that is mostly consumed by the Chinese vermicelli industry and the pea protein is mostly sent back to the North America. Two long-distant transport flows involved: (1) dried peas from Canada to China; (2) pea protein form China to America.

Figure 2 Canadian Pea Products Supply Chain (Current)

2.2 Joint Product

Based on W.-H. Tsai et al. (2007), if two or more products are produced together in fixed proportions using a common manufacturing process and inputs, they are called joint products. Such processes are common in industries like petroleum refining, meat packaging, and flour milling, etc. Pea protein, pea starch and pea fiber are joint products of the pea processing. The quantities produced of these three joint products cannot be decided individually, because they are produced in fixed proportions (Wen-Hsien Tsai et al., 2008).

2.2.1 Major Product, Co-product, By-product

Based on Manes and Smith (1965), Shammugam et al. (2019), and Shastitko and Shastitko (2015), the major product is the main objective of a production process, while by-products are

incidental or undesired outputs. Co-products can be categorized between major products and by-products. Major products have the highest aggregate value, followed by co-products and then by-products that have low unit value or a small output. The key difference between co-products and by-products is that co-products bear the joint production costs with major products, while no joint production costs are allocated to by-products.

Technically speaking, pea processing companies sell multiple pea ingredients (e.g., pea protein, pea starch and pea fiber). Depending on organizational strategies, their focus is likely to vary. The pea processing expansion in Western Canada is based on the increasing global demand for plant-based protein. For example, the output proportions of an isolated pea processing process would be 75-77% pea starch, 13-15% protein and 8-10% fiber. Considering the high output proportions of pea starch, which is likely to contributes to a considerable aggregate value, it is reasonable to consider pea starch as a co-product. In Canada, pea protein is regarded as the major product of pea processing, while pea starch is a co-product, pea fiber is a by-product.

2.2.2 Aggregate Profit

Joint revenue is an important concept of joint products. These are the total revenues derived from products which are complementary in the marketplace. These revenues are not specifically identified with any of the individual products (Butler, 1971).

The objective of a company is its aggregate profit. Pea processing companies process whole peas into pea protein, pea starch and pea fiber, and receive revenues from selling various pea ingredients. The aggregate profit of a company consists of the revenues gained from each pea ingredient manufactured, less their costs of production. By the nature of joint products, pea processing companies are unable to produce each pea ingredient at its optimal level in a production process. “The output choice of one product that maximizes profit implies output of other products through fixed proportion.” (Shastitko & Shastitko, 2015). To maximize its aggregate profit, a company needs to decide the quantity of one product it wants to produce and take the consequent output of other joint products as unavoidable.

2.2.3 A Glut for Pea Starch

An excess production problem occurs when the volume of joint products produced is different from the volume required by the market (Lager, 2001). A production process may satisfy

requirements for some joint products and produce unwanted quantities for others. Therefore, expanding pea processing capacity in Western Canada to serve the pea protein market, produces an unwanted supply of pea starch, simultaneously.

Based on Shastitko and Shastitko (2015), the difference between a product's output level and its sale level is called "a glut". Normally, high demand for a major product would result in high probability of a glut. In the case of pea ingredients, the high demand for pea protein, is likely to create a glut of pea starch. In terms of a glut, companies can choose to process it separately and then send it to a completely different market. If the new market is competitive, (1) When wastage of a glut is possible (i.e., wastage involves insignificant/ moderate cost), a company can decide whether to sell a glut or not; (2) When simply disposing a glut is infeasible (prohibitively high cost), a company has to sell it at a price that minimizes losses. The output of the co-product considered ought to be the same as that product's maximum possible sale level.

The exploration of new end-uses for a co-product is an alternative to hunting for a new market to the dispose of a glut. For example, the pea processing company, Merit Functional Food, collaborates with the Manitoba Food Development Centre to investigate applications of by-products, scouting new markets for its pea starch (Protein Industries Canada, 2020).

In Deutsch's (1965) chlorine-caustic soda example, an imbalance between the output of one product and its level of sale is normal. To dispose the surplus of chlorine or caustic, a producer tends to make efforts to increase sales to expand his aggregate profits. For example, selling the surplus to a distant market. Even if the net revenue obtainable in that market is relatively small, it is preferable to none when the producer aims to maximize his aggregate profits. This principle is the essence of base point pricing. It allows a producer to accept a low return from marginal buyers, while collecting a higher net revenue from others. This would also apply to one Canadian pea starch incumbent involved in this thesis, who states that his price setting for pea starch in distant markets would be flexible. Their incoming supply of pea starch is expected to highly outweigh the domestic demand and they want to find ways to consume the expected surplus.

2.2.4 Summary

The increasing processing capacity of pea protein in Western Canada and the fixed proportions nature of the pea processing brings about an unavoidable excess supply of pea starch. As a co-product for pea protein, pea starch is obliged to the sharing of joint production cost. To

maximize its revenues, a company should take into account its aggregate profits from selling all pea ingredients, including pea starch. The excess problem of pea starch involves a difference between the supply (the output level) and the demand (the level of sale) of this co-product, noted as “a glut”. Depending on the conditions, the disposal of a glut may vary. The marketable option for pea starch is available. The exploration of new end-uses of pea starch is underway. Alternatively, new opportunities for pea starch in export markets worth researching.

2.3 Pea Starch

2.3.1 Pea Starch Literature

The extant studies related to pea starch investigate mainly the properties, processing technologies and applications of pea starch. Most pea starch studies focus on biological and food sciences. For example, Ratnayake et al. (2002) summarize the present knowledge on composition, structure and physiochemical properties of pea starch and provided suggestions for future research to enhance the utilization of pea starch in the food industry. Some researchers focus on food and bioprocess technologies. Sim and Moraru (2020) explore the effects of high-pressure processing on starch structure formation in mixed pea protein–starch systems. Many articles examine pea starch in relevant industries and the possibility of pea starch substitution. For example, Saberi and his team (2017) indicate that pea-starch-based film, with natural antimicrobial agents applied, can better preserve food safety and prolong the shelf-life of the packaged food.

2.3.2 Isolated Pea Starch versus Concentrated Pea Starch

Pea starch isolate and pea starch concentrate are two types of pea starch that are produced by using different processing techniques. Isolated pea starch involves a wet method, while concentrated pea starch involves a dry method. Both processing techniques can get starch, protein, and fiber, but with different percentage range (Hoover et al., 2010; Li et al., 2019). According to one concentrated pea starch supplier who was interviewed, normally, when yellow peas are processed, 50-60% of the product is starch. Only 15-20% of the product is protein and about 17%-25% is fiber. However, for one isolated pea starch plant involved, the output proportions of their pea processing process are 75-77% pea starch, 13-15% protein and 8-10% fiber. Compared with concentrated pea starch, isolated pea starch is purer and with lower protein content. Consequently, the price of isolated pea starch is higher than concentrated pea starch. The transformation from

concentrate into isolate also occurs. According to one Canadian pea starch participant, who has already been in pea processing industry for more than ten years and has involved in both companies that use wet method and dry method, some pea processing companies would purchase concentrated pea starch and refine it into an isolate one.

According to one Canadian participant, some people in the industry call pea starch "pea flour". The difference is whether the peas are fractionated/extracted by employing a dry/wet method (as mentioned earlier), or it is simply milled. Therefore, this thesis research pea starch that involves a dry/wet method.

2.3.3 Pea Starch Application

This section focuses on industrial applications of pea starch that are already commercialized in the industry. However, applications that are only found in literature but not mentioned in pea starch companies[2]' websites or Canadian pea starch producers involved, are not included. These non-mentioned applications are likely not yet applied in the industry and still under research at the lab level. Table 5 shows industrial applications of pea starch.

Table 5 Industrial Applications of Pea Starch

Market	Applications
China	Vermicelli (isolated pea starch exclusively), Bean jelly, Batter coatings
North America	Pet food, Feeds, Bakery and snacks, Pasta and noodles, Meat products, Meat alternatives, Confectionary products, Dairy industry, Oil seed industry, Cosmetics, Nutraceutical industry, Pharmaceutical industry

Sources: pea starch companies' websites, data collected from Canadian pea starch participants

[2] Companies included here are Chinese pea starch companies and Canadian pea starch companies, because this thesis aims to find out the market potential of Canadian pea starch in the Chinese market. Therefore, existing consumer markets in China are definitely where Canadian pea starch will compete. As for consumer industries where Canadian pea starch suppliers are qualified and already run their business in North American, the same consumer industries in China will be potential consumer markets for Canadian pea starch companies.

2.3.3.1 Applications in China[3]

Pea starch is the major raw material of Longkou vermicelli (Chinese: Longkou Fensi) (Baidu Wiki, n.d.(a)), which is a well-known Chinese vermicelli, and the biggest pea starch consumer in China. In this thesis, Chinese vermicelli/vermicelli (producers/processors/buyers, etc.) all denote Longkou vermicelli or companies that produce this product. According to Canadian concentrated pea starch companies participated, only isolated pea starch can be used to produce vermicelli. Pea starch can be used as the major raw material for bean jelly (Chinese: Liangfen, Liangpi) (Baidu Wiki, n.d.(b); Wikipedia, 2021(a)), which is the second commonly used application in China. The third most commonly mentioned application found in Chinese pea starch companies' websites is batter coatings, where pea starch is advertised to enhance the crispness and mouthfeel of coatings.

2.3.3.2 Applications in North America[4]

The majority of pea starch is consumed in North America by the pet food. Knowing from some North American pet food producers' company websites and also confirmed with Canadian pea starch companies participated, pet food producers also add either dried pea, or pea protein, or pea fiber, or any combination of these pea products in their pet food products. The feed industry, including animal and aquaculture feed, is the second largest pea starch consumer in North America. Followed by are all other applications, including bakery and snacks, pasta and noodles, meat products, meat alternatives, confectionary products, dairy industry, oil seed industry, cosmetics, nutraceutical industry, and pharmaceutical industry. These other applications consume relatively small percentage of pea starch in the North American market.

In this thesis, both applications in China and applications in North America are regarded as potential applications (or consumer markets/industries) for Canadian pea starch to the Chinese

[3] According to a vermicelli processor participated in this thesis, who already run vermicelli business for 13 years, Chinese pea starch companies occupies about 98% of the market share of pea starch consumed by Longkou vermicelli industry. Also, vermicelli industry is the dominant pea starch consumer market. Therefore, applications that are commonly mentioned in Chinese pea starch companies' websites (specifically the Chinese version), are regarded as common pea starch applications in China. Other than that, any applications exist in China are considered relatively new and rare in the Chinese market.

[4] This section is compiled based on information provided by Canadian pea starch companies participated in this thesis and Canadian pea fractionation/extraction companies' websites.

market. Chinese food producers from these consumer markets/industries are regarded as potential buyers for Canadian pea starch.

2.4 Agri-food Export Competitiveness Literature

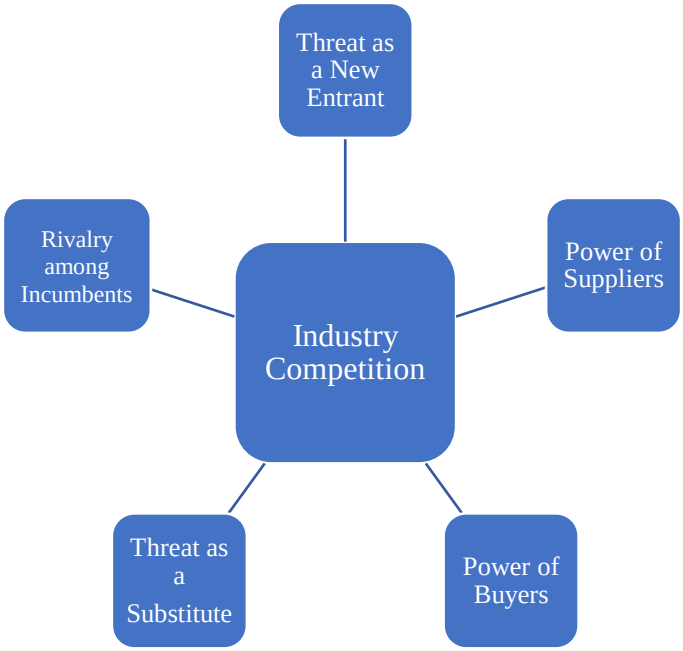
Competitive analysis of agri-food in international markets has been the subject of many research studies. Analysis is conducted mainly from specific elements related to export performance, supply chain, food processing and market-oriented perspectives. Many researchers analyzed specific factors related to agri-food export competitiveness. The four main pillars of those factors are food safety, political factors, innovation, and cost and price. For example, with a survey among fish exporters, sanitary and phytosanitary measures of EU market were found to enhance competitive advantages of Mauritian fishery products (Neeliah, et al., 2012). Some studies investigated the agricultural export performance from a supply chain perspective. Yusuf and Trondsen (2013) developed a theoretical foundation to investigate competitive entry opportunities into new seafood markets from a value chain aspect and to examine factors associated. A few researchers focus on the competitiveness of food processing. Gopinath et al. (1996) indicated that efficiency gains and reduced real output prices of primary agriculture enhance the competitiveness of US food processing industry in terms of price declines. Some researchers analyzed the competitive performance of agricultural products from a market-oriented perspective. With a market-oriented innovative quality framework, Yusuf and Trondsen (2013) examined factors that related to entry into new seafood markets and relationships between these factors. In another paper of Yusuf and Trondsen (2014), the international competitive performance of Indonesian Crab Industry in relation to customers was found to be closely related to infrastructural capacity, product differentiation and customer service. Bossle and his team (2015) investigated the competitiveness of eco-innovative food from perspectives of both the supply-side and the demand-side of Brazilian food industry.

2.5 Competitive Forces Framework for New Entrant

Based on Porter's (2008) competitive Five Forces Model, five forces shape competition within an industry. By analyzing these five forces and thereby understanding an industry’s competition structure, a company can find ways to shape its competitive position in an industry. In this thesis, this model is modified to analyze competition structure faced by a new entrant in an

industry or a market, thereby suggesting the newcomer how to strategically gain a competitive position. Figure 1 shows the modified framework for new entrants' competitive forces analysis. In this thesis, Canadian pea starch is regarded as a new entrant and a potential substitute to the Chinese market.

Figure 3 The Modified Five Competitive Forces for New Entrant



(Modified based on the Five Competitive Forces Model of Porter (2008))

It is impossible to understand industry competition without an overview of effects derived from the new entrant itself, incumbents in the researched market, substitutes, suppliers, and buyers. In other words, to figure out competition structure of Canadian pea starch in the Chinese market and to suggest strategies to gain competitiveness, requires a consideration of all five forces. And the strongest force(s) need to be watched closely, because they/it dominate(s) to shape the new entrant's industry competition structure and the new entrant's ability to squeeze profits from the industry. Followed with the explanation about all five forces, based on Porter's (2008) and combined with appropriate adjustments to the pre-modified framework.

2.5.1 Threat as a New Entrant

If existing competitors face high threats from a new entrant, they find it harder to compete. In this case, it is in favor of the newcomer to enter the market and gain competitiveness. The threat as a new entrant depends on: (1) how high the entry barriers facing the new entrant; (2) how likely incumbents are expected to react. Entry barriers deter a newcomer to enter a market and make it harder for the newcomer to compete. The higher barriers facing a new entrant, the less threatening the new entrant would be. "Barriers to entry can derive from supply-side economies of scale, demand-side benefits of scale, customer switching costs, capital requirements, some incumbency advantages independent of size, unequal access to distribution channels, and restrictive government policy." (Porter, 2008). For example, barriers are higher if incumbents are enjoying an economies-of-scale discount from their suppliers, because it leaves them more room to reduce their product prices. Restrictive government policy may directly hits the smooth entry for a newcomer, or even prevents it from entering the market (Kim & Marion, 1997). For example, US government banned Chinese companies from providing its 5G equipment builds up entry barriers for China's to enter and compete in 5G wireless networks market in the US.

Expected incumbents' retaliation discourages a new entrant to enter the market. If incumbents are anticipated to retaliate forcefully, the newcomer may choose not to compete. As a result, incumbents will face less threats from new entrants. Newcomers would strongly believe reactions from incumbents when previous vigorous reaction exists in the industry, when incumbents are strong enough to fight back, and when incumbents tend to compete by price cutting. And incumbents likely react vigorously when the industry grow slowly, because newcomers can only poach market share from incumbents in such an industry.

2.5.2 Power of Suppliers

The power of suppliers against their customers will shape the competition structure of customers' industry. Powerful suppliers tend to charge higher prices or choose to provide limited quality/services, or make the cost shifted to their customers. Through all these ways, they then squeeze profitability out of their customers. This makes it harder for the customers to gain profits in their own industry, which is disadvantageous for a customer who wants to gain competitiveness. For example, Microsoft poaches profitability from personal computer makers by increasing its operating systems' price, thereby making these customers struggle to compete in the personal

computer industry. Suppliers are powerful if customers' industry is not their major revenue maker, or if changing suppliers involves high switching costs, or if products provided are highly differentiated. Suppliers tend to be more powerful when products they offered have no substitute. Also, suppliers who are able be to integrate into customers' industry appear to be powerful, because these suppliers likely become customers' competitor and make it harder for customers to compete in customers' industry.

2.5.3 Power of Buyers

Powerful buyers tend to force price reductions, and require better quality or more service, at the expense of suppliers' profitability. In this way, the power of buyers imposes some pressures on suppliers when suppliers want to achieve competitiveness in their own industry. Buyers are powerful if they have strong negotiation power against their suppliers, especially when they are price sensitive. Buyers are powerful if the customer base is small, or if they are large-volume purchasers, or if products they purchase are undifferentiated. Buyers possess power if their switching cost to a new supplier is very low, or if they can produce what they previously purchase from their suppliers once suppliers are found to be too profitable. Buyers are especially price sensitive when products purchased account for a big part of their costs/procurement budget. Buyers are sensitive to price if they have low profit margins or they are cash-strapped or they struggle to cut down their costs. Buyers tend to focus more on price when products they buy have little effect on the quality of products they produce. Also, buyers would take more interest in price when the improvement of non-price factors does not pay back significantly.

2.5.4 Threat as a Substitute

"A substitute performs the same or a similar function as an industry's product by a different means." (Porter, 2008). Also, the threat of substitutes may derive from the buyer side, where a buyers' product is replaced by a substitute. As a result, the industry's product is indirectly substituted because the demand shrank. High threats from a new entrant as a substitute pushes the newcomer to win the substitution game. The threat as a substitute is high if this substitute's price-performance trade-off sounds attractive. For example, the cost-effectiveness of internet-based phone services, such as Skype, forcefully threatens conventional providers of long-distance telephone service. Sometimes, lower prices alone cannot guarantee export competitiveness unless

they are accompanied by improvement in perceived quality (Kagochi, 2007). The better the relative value of the substitute, the more likely it will gain market share and form its competitive strength. The threat as a substitute is high when switching cost to a substitute is low. Low cost of switching to the substitute encourages buyers to try the new thing. This provides a chance for new entrants to gain competitive advantage.

2.5.5 Rivalry among Incumbents

High rivalry drives down an industry's profitability, thereby making it harder for new entrants to compete and poach profits. Intensity and basis are two metrics to evaluate how well the rivalry can limit an industry's profit potential. (1) Intensity indicates how intensive incumbents' competition is. High intensity indicates high rivalry among incumbents, which is bad news for newcomers who hope to easily squeeze profits and gain strength in the industry. The rivalry among incumbents is extremely intensive if the pool of incumbents is large, or participants within this pool with equal size and similar power. Intensive competition is underway where an industry grows slowly, or where high exit barriers exist, or where incumbents find it hard to perceive other peers' signals. Also, the intensity of rivalry is likely high if incumbents have extreme commitment for the business and want to gain leadership. (2) Basis includes what dimensions incumbents compete on, and whether incumbents compete on the same dimensions and the same markets. If incumbents compete on dimensions other than price, the rivalry is less destructive to profitability. This is because nonprice dimensions, such as product quality and services, can enhance customer value and support higher prices. It would discourage customers to negotiate prices at the cost of incumbents' profits. Also, nonprice competition helps to prevent potential competitors, who would poach profits, by improving value relative to substitutes and by raising entry barriers to newcomers. If all incumbents compete on the same dimensions to the same consumer markets, the industry is forced to be less profitable, because one company's gain is another's loss. But it helps to increase an industry's average profit potential when each incumbent aims to serve different customer segments.

2.6 Conclusion of Literature Review

Although previous studies about pea starch provide knowledge about potential applications of pea starch, none have examined the market potential of pea starch based on qualitative customer

analysis. Analyzing a country's agri-food export performance from a market-oriented perspective has been undertaken (Bossle et al., 2015; Yusuf & Trondsen, 2013; Yusuf & Trondsen, 2014), but none of these authors conduct a competitive analysis of agricultural products in export markets by doing a match between customer demand and supplier capability. Moreover, no competitive analysis has specifically examined Canadian pea starch.

Although the Five Competitive Forces framework of Porter (2008) introduces a method to analyze the overall competition structure of an industry, it is from the perspective of an incumbent and neither address the positive/negative attribute of all five forces nor evaluation metrics for each force. The modified model in this thesis is customized based on Porter's (2008) to feed these needs, providing a theoretical base to understand competition from the perspective of a new entrant (also as a substitute), and to devise strategies for the new entrant to gain competitive position.

Chapter 3 Qualitative Method Analysis

3.1 Grounded Theory Approach

Based on Creswell (2013), Ground theory is a qualitative research approach where researchers generate or discover a theory of a process, an action, or an interaction through interrelating categories of information based on data collected from individuals who have experienced the process. The generation of the theory helps to explain practice or provide a framework for further research. Grounded theory is a good choice when a theory is not available to explain or understand a process. Related models may currently exist in the literature, but inappropriate because they are developed by studying populations different from those of the researcher. Or the models are incomplete because they do not address valuable variables or categories or interaction of interest to the researcher.

The grounded approach is good to use in this thesis. Although Porter's (2008) Five Forces Competitive model is available for competitive analysis, it is from the perspective of an incumbent rather than a new entrant (also as a substitute). Also, the model is incomplete because it does not clarify whether the five forces affect competitiveness positively or negatively and does not include some categories that can be used to evaluate the five forces (mentioned as evaluation metrics in this thesis). Therefore, the following sections develop a modified model to fill the gaps described above by using the grounded theory method. Also, the theory is grounded based on information and data collected from the case of Canadian pea starch, involving Chinese food processors (buyers) and Canadian pea starch suppliers.

3.2 Data Collection

This thesis relies primarily on interviews for data. Telephone interviews were carried out from March to July in 2020 (some follow-up data from December 2020 to January 2021). Telephone interviews provide the best source of information when direct access to participants is impractical for the researcher, due to the geographical diversity of research participants (Chinese participants and Canadian participants located in different areas) and social distance requirements during COVID-19 pandemic. Multi-phase interviews with Chinese food processors are conducted first. All Chinese participants are involved in Phase-1 interviews. The Phase-1 aims to assess whether, or not, Canadian pea starch is widely used in China. If not, then the question is directed

to determine, whether or not these Chinese customers are willing to try Canadian pea starch. Each conversation in this phase lasts for 5 to 20 minutes. Those who refuse to try Canadian pea starch end their interviews here, while those who accept to apply Canadian pea starch to their products subsequently enter the Phase-2 of the interviews. The Phase-2 tries to figure out the factors that influence Chinese buyers. Each Phase-2 conversation lasts for 10 to 40 minutes. Interview questions are listed in Appendix A and Appendix B.

With all above customer data collected and summarized, in-depth interviews with Canadian pea starch suppliers are then carried out. Each interview lasts for 30 to 50 minutes. Questions asked are designed based on the summarized data and listed in Appendix C. This is followed by the matching analysis between Chinese customers' demands and Canadian suppliers' ability to serve those demands.

Informed consent forms (Appendix D) were explained and signed before interviews. Both closed-ended and open-ended questions were asked during each semi-structured interview. Semi-structured interviews were conducted, where the interviewer tries to ask participants key questions in the same way during each interview and some probing is conducted for further information (Ritchie & Lewis, 2003). In this way, the interviewer finds it flexible enough to cover certain topics, probe participants' responses, and ask relevant questions based on these responses (Ritchie & Lewis, 2003). During the interviews, the researcher made an audio recording and took notes about the responses of the interviewees. The interviewer synchronized three recorders (respectively on laptop, iPad and mobile phone) during the interviews to reduce the risk of device disruptions and to provide backup materials for transcription. NVivo 12 is used as a software program to assist in analyzing the data. This research has been approved by the Psychology/Sociology Research Ethics Board of University of Manitoba.

3.3 Gain Access and Make Rapports

As for Chinese vermicelli processors and Canadian pea starch processors, a contact list of potential participants is created based on online searches. As for non-vermicelli Chinese food processors, the interviewer contacted a regional food industry association and sought help from the association to establish rapport with its members [5]. In addition, the interviewer takes advantage

[5] Unlike Chinese vermicelli processors, pea starch is new for most non-vermicelli Chinese food processors. At the early stage of interview invitation, the researcher found it hard to build trust and get any response

of social connections to get in touch with qualified executives. Snowball sampling technique is used in this study. The investigator ends each interview with a request for recommendations of people who may be an appropriate for the research. Considering customs of China and Canada, for Chinese participants, invitations are sent out mainly through phone calls. While for Canadian participants, the researcher sends invitations by email first, and follows up with a phone call if needed. Telephone interviews (also include online telephone interviews) are conducted via mobile phone, WeChat and Skype.

3.4 Sampling

Purposeful sampling strategy is adopted in this thesis. Purpose sampling is a strategy that researchers intentionally select a group of people who can provide best information to research problems under study (Creswell, 2013).

Chinese food processors

58 Chinese food processors were contacted, among them are companies producing vermicelli, candy/jelly, animal feed, extruded snacks, and meat products. 40 of them (69%) refused to try pea starch. Only 18 companies (31%) accepted to apply pea starch to their products and further to Phase-2 of the interviews. The researcher decided to stop the data collection phrase, because after talking with all these participants, all information provided is found to be repeated.

All companies contacted were chosen because they are from target industries of pea starch. Pea starch is a promising substitute for their existing raw materials or additives that they are using, as an alternative of other starches or non-starch ingredients. Also, these companies are all located in China. They are potential customers for Canadian pea starch. One participant in each company was interviewed. The participants involved are owners or represent the companies' research and development (R&D) department. All engage in product research and development of their companies and play a decisive role in raw material strategy. These participants are good representatives for their companies to raise requirements on such a raw material substitute.

from non-vermicelli food processors from the online contact list. Finally, the researcher contacted a regional food industry association. Under the help of the association, the researcher gained easy access to its food processor members and quickly established rapport with those participants. Also, with the association's reference, those food processors are more willing to disclose detailed perspectives about responding to such an innovative raw material substitute.

Canadian pea starch processors

Two Canadian concentrated pea starch companies participated in this study. They are selected as core interviewees for the in-depth matching analysis later in the 4.1.4 section and mentioned as Supplier 1 and Supplier 2. One or two participants from these companies are involved. Among them are vice-presidents, plant managers or board member involving in marketing. They are good representatives for their companies to give answers to how they can serve customers' demands raised by Chinese food processors in the precedent interviews. Also, another two Canadian pea starch processing companies who produce isolated pea starch involved in this study. One person of each company is involved, among whom is CEO or supply chain manager. They are good strategist of their organization. Only isolated pea starch can be used to produce Chinese vermicelli, therefore, to enrich analysis of this study and also provide some insight of Canadian pea starch's market potential in Chinese vermicelli industry, some responses of these two isolated pea starch suppliers are also included during data analysis when it is appropriate, and they are described as informants. The reason for not including these two informants as core interviewees in the matching analysis is because their plants are still under construction during data collection period and cannot cover most of the questions requested by the matching analysis.

Chapter 4 Results

4.1 Presentation of Data and Analysis

This section first discusses the unpopularity of Canadian pea starch in China. Followed by are the reasons why some Chinese food producers refused pea starch. After that, a description and summary of factors that Chinese food producers care about Canadian pea starch is presented. Finally, the matching between Chinese buyers' needs and Canadian pea starch suppliers' ability to satisfy is demonstrated, focusing on factors emphasized by those Chinese food processors. All of these are discussed to better demonstrate the market potential of Canadian pea starch in its Chinese market and provides pre-analyzed data for the competitive analysis in the next section.

4.1.1 Why is Canadian pea starch not widely used in China?

Although pea-based product is a hot topic in North America, the situation seems to be totally different in China. Most Chinese participants have never heard about Canadian pea starch, and many of them do not even know pea starch can be used in their products. This indicates that Canadian pea starch is likely not widely used in the Chinese market. Also, because both Supplier 1 and Supplier 2 sell most of their pea starch to pet food industry in North America, it makes sense to figure out whether or not pea starch enjoys the same popularity in Chinese pet food industry. Having no access to Chinese pet food producers, the researcher first went forward to two popular online shopping platform in China, Tmall (Wikipedia, 2021(b)) and Taobao (Wikipedia, 2021(c)), and reviewed Chinese pet food products available on those two platforms. It turns out that pea starch is seldomly included in Chinese pet food producers' ingredient lists. In contrast, pea starch, pea fiber and pea protein are found to be normal ingredients of some most-popular North American pet food on the same platforms. (The researcher also went to websites of companies who produce the North American pet food, to reconfirm ingredient lists of these North American pet foods.) Based on these second source data collected from online searches, it is fair to say pea starch is unpopular among Chinese pet food producers.

To sum up, Canadian pea starch is not widely used in the Chinese market. Here are some possible reasons provided by the interviews with the Chinese participants.

Reason 1: The lack of introduction

Many participants said that they have never heard about pea starch and do not even know pea starch can be used in their products. And the reason for this can be the lack of introduction of pea starch, as some interviewees noted. A feed producer said:

> *"Although the dry pea is an excellent raw material and we also add corn starch in our products, we've never thought about trying pea starch. I'd rather say, nobody has ever told us there's such a by-product for dry peas. I think the unpopularity of pea starch in China is due to the lack of introduction. It takes time for people to accept a new stuff. But once it's introduced, more and more people will know it and use it if it's applicable, finally get used to it."*

Reason 2: Excellent performance of existing raw materials

Excellent performance of existing raw materials can be a hinderance for Chinese food processors to experiment with Canadian pea starch. For most target industries of pea starch, their traditional raw materials have been used for many years and their customers are used to what their products are today. Changing raw materials means an adjustment to the products and may bring about a risk of product quality instability. As a result, some processors are reluctant to give Canadian pea starch a chance and may even regard it as a waste of time and money. A vermicelli interviewee mentioned:

> *"At present, 98% of the market share is occupied by domestic pea starch and only 2% left for the imported starch. Some vermicelli producers are so satisfied with the pea starch being used that they are unwilling to try a new one no matter how cheaper it is."*

One participant who produces candy and jelly powder held the same view:

> *"Probably because gels being used are perfect, like gelatin in candy and pectin in jelly. As I see it, candy and jelly produced in North America may not as gummy as their Chinese counterparts are."*

Reason 3: Poor performance of pea starch

However, it may also be an issue of the pea starch itself. Some participants said that probably some companies in China have already tried pea starch, but it is found to be inferior to the existing raw materials or the price is not that competitive. As a result, there is no way that pea starch will be used widely. This supposition is proved in the vermicelli case in which both Chinese pea starch and Canadian pea starch have been tried. The latter does not perform as well as its Chinese counterpart does.

Some readers may disagree with this idea because many researchers have examined the excellent characteristics of Canadian pea starch, compared to some traditional starch. Also, the outstanding performance of pea starch makes it popular in some industries in North American, such as feed and pet food. However, the excellence of pea starch in North America does not guarantee the same case in its potential Chinese market. Pea starch should not be simply compared with other starch. Any additives with similar functionality in the Chinese market can be its competitors. Also, it may not just be a matter of cost and performance, but something about a country's food manufacturing rules. As the owner of a candy and jelly company said:

> *"I think it is likely that our industry has done a lot of tries, while no ideal substitute has been found by now. Even if the pea starch you mentioned makes candy taste better in North America, probably it is still a long way for the improved candy to go to beat Chinese candy. The reason for this is that rules of food manufacturing differ from country to country. The amount and the type of gel or additive allowed in candy can be different between China and North America. It is this difference makes Chinese candy chewier, while the North American competitors are not permitted to use the same raw material or apply the same amount in their products. Because I can legally use what I am using and moreover my existing raw materials are outstanding, there is no reason for me to make any changes."*

Moreover, this can be an issue of consumer preference. Chinese consumers' taste can differ from that of North American buyers. Although pea starch somewhat fits its North American market well, it is possible that Chinese buyers think the same pea-starch-based product tastes weird. Also, the poor performance of "pea starch" might because it is indeed pea flour. Or specifically for the failure in vermicelli industry, it is concentrated pea starch rather than isolated pea starch.

Therefore, the poor performance of pea starch is probably one reason for its unpopularity in the Chinese market. It may be related to the pea starch itself, a country's rules of food manufacturing and consumer preference. Another possibility is that the wrong pea starch was used.

Reason 4: Political factors

Another reason mentioned is political factors. As one participant noted:

> *"Probably something related to political factors, I mean, because the Chinese government do not want to do business on pea starch with Canada."*

However, to the best of the researcher's knowledge, no such restriction on pea starch exists in China at present. But the impact of political factors does make sense in some situations. The turbulences between two countries can have an adverse effect on the stability of product price and supply. If Chinese manufacturers can find a decent domestic substitute for imported pea starch, they are more likely to choose the domestic product.

To sum up, the unpopularity of Canadian pea starch in the Chinese market is probably due to the lack of introduction of the pea starch into this market, the excellent performance of Chinese food processors' existing raw materials, the poor performance of the pea starch itself, and potential negative impacts resulted from political factors.

4.1.2 Why do some Chinese food producers refuse to try Canadian pea starch?

Whether or not pea starch is a promising substitute, only the result of an application test can tell. But it still can be refused by some Chinese food producers before an examination is conducted, mainly due to the following reasons.

Reason 1: Pea starch is unable to beat their existing raw materials.

Some food manufacturers tend to judge the potential of pea starch based on their experience. Once they reckon that pea starch is unlikely to perform better than what is being used, they will refuse this substitute. The candy and jelly producer said "no" to pea starch on his candy:

> *"That is impossible. The price of pea starch is totally not competitive to that of corn starch. Moreover, the starch content of corn starch is up to 99%. No matter how high the starch content of pea starch is, it cannot beat the corn starch. As a result, it is not persuasive to do a test on it."*

A Chinese sausage producer said:

> *"Many sausage companies used to add starch in their products to achieve a higher yield. But today, most of them use soybean protein instead, because compared with starch, the former is more user-friendly and makes the sausage taste better."*

Reason 2: Their existing raw material is so satisfactory that it does not need a substitute.

As Yusuf and Trondsen (2013) said, demand for new product attributes can accelerate the introduction of new products to the market. But if a food processor is pleased with what is

being used, whether to change or not will become a dilemma. A vote to "no" may result from customers' satisfaction. As what one sausage producer replied:

> *"We do not need to get it stuck together by adding starch. Meat becomes sticky if it is chopped. Many of our customers like the way it tastes now."*

Also, it may be simply because the food manufacturer is too lazy to make any changes. One informant told the investigator:

> *"Some food producers are reluctant to talk about this. You know, some people just hate changes and try to avoid new stuff."*

Reason 3: They are too conservative to try something new.

Some Chinese food producers have used their existing raw materials for a long time. Even if a future of pea starch seems promising, they just do not dare to make a change and would rather wait until it is being widely used in the industry. One informant told the researcher:

> *"They are quite conservative. It is difficult to persuade them into giving it a try. But if someone they know applies this pea starch to meat ball and it comes out that the pea-starch-based meat ball tastes better, they are likely to have a try. They are waiting for the one who dares to be the first one."*

Reason 4: Pea starch requires more advanced equipment.

When adjustments are required on equipment or the production line, pea starch may get a rejection from some Chinese food manufacturing companies. The most possible reason for this is because they think pea starch is not worth the investment. This issue was mentioned by one Chinese sausage producer and one candy company interviewed.

Reason 5: It is their tradition to use the existing raw materials.

One interesting reason for refusal is about the tradition. Probably for some industries, any single change is prohibited by the tradition, because any changes will make the product different. One informant made her commentary:

> *"The industry of Chaozhou Beef Ball (a well-known Chinese meat ball) just keeps doing it in this way. If you ask these meat ball producers to change the ingredients which have been used for so long, they hardly can accept it. It is like asking a person who eats rice for three meals a day to switch his staple food into bread. I think it sounds more like a tradition."*

To sum up, Canadian pea starch is refused by Chinese food producers mainly for five reasons, namely inability to compete, unnecessary substitution, conservative buyers, equipment requirements, and diet tradition.

4.1.3 What factors do Chinese food producers care about?

In many situations, the value fulfilment of a food product on a buyer is a major antecedent for the buyer's food choices (Yusuf & Trondsen, 2013). Knowing the factors that motivate Chinese food producers to make their decisions on pea starch, is an essential step in building market-oriented competitive theory and figuring out Canadian pea starch's strengths. The major factors are summarized in terms of product quality and performance, price and cost, food safety, supply capacity and stability, services, brand, success stories, and supply chain.

Product quality and performance

Product Quality

Product quality is one of the top two elements that Chinese food processors care about. The product quality here is more about the performance of pea starch. In other words, how the taste, texture, flavor, appearance, health properties, etc. of Chinese food processors' final products look like, with pea starch added. Normally, the quality of pea starch will be confirmed only after food producers applied the pea starch sample into their products and examine its performance. Some processors may have restrictions on the physical and physico-chemical properties of the sample (such as PH) before the examination. Except for some vermicelli companies, all other participants indicated that pea starch should not perform worse than their existing raw materials. While for the former, a slightly poorer performance of pea starch is acceptable, if it is with a lower price, because those companies are looking for a cheaper substitute for vermicelli supplied to the low-end market. Obviously, this demand is associated with his target market strategy.

One attribute worth mentioning for product quality is its health property. Although many extant pea starch literatures and news studied and highly appreciated the excellent health benefits of pea starch, this attribute is not a major focus for most Chinese participants. Although most participants agreed on the trend for heathier food in Chinese food industry, they still put priority to other product quality attributes, such as taste, texture, flavor, appearance, etc. The health benefits

of pea starch were mostly mentioned as a trade-off for a decent price difference, but only if other attributes perform well. As an extruded snack producer mentioned:

> *"I'll first examine how pea starch performs in my puffed snacks, compared to corn starch and rice starch that we are using, to see how crispy and tasty the puffed products come out to be. Then it comes to the cost. If the price difference is not that large, with its health benefits, I'm likely to accept it. But if the cost comes out to be twice or triple, it'll become 'impossible'. You know, like most Chinese extruded food manufacturers, our profit margin is really small."*

Judgement for the value of health properties is always subjective. For example, it is for the food producers to judge whether the improvement of the nutritional value is worth the increase in the price. This is because their existing raw materials are being widely used in their industries. No matter how less nutritious the existing raw materials are, they are legally permitted by the Chinese food manufacturing industry. In other words, food producers are lawfully allowed to keep using their existing formulas and refuse any healthier ingredients. The only scenario that health properties were highly appreciated during interviews is when the consumer market for food processors' final products has a demand for this health attribute. This indicates that end-users of final products take value of these health benefits, as a result, they are likely to accept a decent price increase. Then there is room for price premium of food producers' end.

Therefore, product quality (such as taste, texture, flavor, appearance, etc.) is a key concern for Chinese food processors involved. Health properties of pea starch is an exceptional attribute and serves more like a bonus that can offset the loss for a minor price increase, but not at the cost of other product quality attributes' performance.

Convenience

Convenience is another property for product quality and performance. Convenience of food products is associated with reducing input (such as time, physical energy and mental effort) required from consumers in food-related activities (Buckley et al., 2007; IGD, 2002) Serving markets' needs for more convenient products is important for food producers to seize opportunities and gain advantages (Bossle et al., 2015; Yusuf & Trondsen, 2013).

One convenience concern is connected to the reconstruction of production line/equipment, which tends to require input (such as money, workforce, training, etc.) from Chinese buyers and ruin the convenience of pea starch. Among non-vermicelli food processors interviewed, pea starch

is expected to partly or fully replace their existing raw materials. For cases where non-starch raw materials will be replaced, whether or not this replacement will bring about a big change in production line or the reconstruction of processing equipment, is a concern for some Chinese food processers. A candy company told the researcher:

> *"Another factor we are concerned about is the production line. Is it similar to the one we are using now? If big adjustments are required on the production line, we would say 'no' to this new raw material."*

The "no" became true for a Chinese sausage company, because compared with their existing raw material, starch has higher requirements on the equipment. While a jelly producer thought it differently:

> *"It depends on how profitable it will be if we apply pea starch into product production. If it worth an investment, we are willing to spend some money on the new production line."*

However, the concern about switching production lines is seldomly discussed among starch users because they simply regard pea starch as another starch and default all starches to be pretty much the same.

Another convenience issue is related to branches/distributors located in China. As for Canadian pea starch suppliers, all Chinese participants prefer those with a branch or distributor in China. Some of these informants even regard it as a prerequisite. This will provide Chinese buyers with a more convenient access to the pea starch and relevant services. For non-vermicelli food processors interviewed, they are rather naïve about pea starch. The need for after-sale product support is likely to occur. Also, due to the nature of food manufacturing, infield product support may also be required. As a result, an easy access to product support is highly expected. And an easy access to the suppliers is regarded to be important for tackling issues (such as product quality issue) that require suppliers' infield involvement in the future. Without a branch/distributor located in China, a Canadian pea starch company will find it hard to satisfy these customer needs.

Although not applied to every non-starch user involved, convenience in terms of production line/equipment reconstruction can be a determinant on whether to use pea starch as a substitute. A promising future for pea starch can help to eliminate its Chinese customers' concerns on this issue. Convenience in terms of branches/distributors located in China, however, is a

concern among all Chinese participants and serves as a prerequisite for some non-vermicelli participants to decide whether to use pea starch as a substitute.

Price and cost

Price and cost is the second top element that Chinese food producers are concerned about. The price here means the purchasing price of pea starch. The cost means Chinese food processors' production cost with pea starch added to their production process.

Price

The purchasing price of pea starch is mostly used by Chinese food processors to make a preliminary judgement on the potential of such a substitute. It is mainly compared with the purchasing price of their existing raw materials. For example, a vermicelli producer would compare the purchasing price of Canadian pea starch with the purchasing price of their current pea starch. While a jelly producer tends to compare the price difference between pea starch and the gel being used. This sounds reasonable because for Chinese food processors, the price decline in raw materials tends to lower the price of their final products (Gopinath et al., 1996).

A participant, who produces both candy and jelly, is a good example. His attitudes towards pea starch vividly demonstrates how the purchasing price of pea starch can affect his preliminary judgement on this substitute. When talking about pea starch is likely to replace his existing starch in candy production, this participant said:

> *"That is impossible. The price of pea starch is totally not competitive to that of corn starch. Moreover, the starch content of corn starch is up to 99%. No matter how high the starch content of pea starch is, it cannot beat the corn starch…Why I would replace my corn starch with such a more expensive substitute?"*

As for pea starch's application to jelly, the participant said:

> *"When it comes to jelly, that would be a different story…You know, the market price of gels used in jelly is…If pea starch is able to partly replace the gels that we are using, our cost will reduce. Really, it can greatly reduce our cost."*

Cost

Due to the nature of food manufacturing, it will eventually come out to be a comparation in production cost. In other words, after confirming the purchasing price and examining the

performance of pea starch, food processors would compare the new production cost (with pea starch added) to their previous production cost. This is because a long-run price competitiveness advantage requires a lower-cost structure (Gorton & Davidova, 2001). Chinese food producers need to make sure that this new substitute does not unable them to set a competitive price for their products.

Price and cost is always mentioned together with product quality of pea starch during interviews. As Kagochi (2007) stated, lower prices alone will not guarantee export competitiveness unless they are accompanied by improvement in perceived quality. It is more about a trade-off between these two factors. If price competitiveness is unachievable, food processors need to add value to their products and make sure that consumers are willing to pay an extra premium (Bossle et al., 2015; Grunert, et al., 1993).

Chinese food processors' attitude towards price and cost can be divided into two groups, vermicelli and non-vermicelli. For the vermicelli group, a lower purchasing price of pea starch is important to persuade them to switch pea starch suppliers, because the product quality of their existing pea starch already serves their needs or even exceeds their expectation. As a result, price competitiveness seems to be the key to win market share of this group. However, the non-vermicelli group is more complicated. Technically speaking, what these food processors are looking for is a more cost-effective substitute rather than simply a cheaper one. This means an increase in price is acceptable as long as the price differential is not that large. Whether the price is acceptable partly depends on what product the pea starch will be applied to. Some non-vermicelli food producers connected it with profitability. Just as one candy company said:

> *"It mainly depends on the price of pea starch. Of course, whether we will accept the price you offered depends on the value of the product in the market and how high a price we can set on this product. That is something about profitability."*

The more profitable a food processor's product is, the larger the price difference they can tolerate.

Therefore, price and cost, in terms of the purchasing price of pea starch and buyers' production cost incurred, would likely be combined with product quality when making food choices. Focus for price and cost varies from vermicelli producers to non-vermicelli food producers. Their tolerance for price premiums is largely affected by how profitable their products are.

Food safety

Although most participants did not proactively emphasize food safety during interviews, they consider food safety as an important issue. It is closely related to the methods they use to verify this issue. In most cases, food safety is verified through certificates or reports issued by a third party. To be more exact, Chinese food processors confirm food safety by checking whether the raw material suppliers hold a certificate or get the permission from Chinese government to manufacture or sell their products to the Chinese market. Most of the time, their suppliers would proactively show them such a certificate or qualification. Thus, they somewhat take for granted that all suppliers would do so. As a result, providing these kinds of verification is expected and becomes the norm for suppliers.

Also, Chinese Customs is regarded as a trustful barrier for unsafe food. As a jelly producer said:

> *"Because when the products are imported, they have already been inspected by the customs, which means the food safety issue has been verified by the authority. This is one reason why some companies in China prefer an imported raw material, even if the domestic one is indeed the same."*

A meat ball producer added:

> *"It is the customs' responsibility to examine the imported product. If it is intercepted by the customs, it is likely that the product is of food safety problem, otherwise political factors."*

Sometimes, food producers will formulate a standard for a raw material based on what they need. This is another approach to eliminate a food safety risk. The raw material will be accepted and regarded as safe once it meets the requirements of the company's unique standard.

Specifically, the animal feed processor seems to have more trust on the food safety of pea starch, because the food safety standard for food-graded product is normally higher than that of its non-food-graded counterpart.

To sum up, food safety is a defaulted requirement from Chinese food producers. Normally, it is proved in three ways, namely a certificate from an authority saying the product's qualification in Chinese food manufacturing, a "Pass" on Chinese Customs' examination and an inspection report showing that the product meets the criteria formulated by food producers.

Supply capacity and stability

Supply capacity and stability here are defined as a pea starch company's production capacity, and its quantity and product quality consistency/stability.

Production capacity and quantity stability

Most Chinese food processors care whether or not a pea starch supplier can constantly provide them with the volume they need. This is not simply about the supplier's production capacity but also the volume allocated to them. Poor production capacity indicates that a pea starch company is unable to serve Chinese customers' demands. This will lead to the removal of the pea starch company from the candidate list as a raw material supplier at the very beginning.

As for the vermicelli industry, pea starch suppliers in China normally put priority to their regular customers, and big buyers as well. For example, one vermicelli producer understands that he will not be the only customer whom his supplier serves. Whether or not the supplier can promise to supply him with as much as he wants is a key element to maintaining his pea starch supplier. This is totally understandable. Because if he switches to a new supplier, he is likely to be deleted from the previous supplier's supply priority list and this increases the risk of supply shortage.

For non-vermicelli participants, those who have never tried pea starch, supply capacity is used to evaluate whether or not this new raw material is worth the investment. The introduction of this new ingredient may induce a switch cost, such as extra money and time spent in the production line reconstruction, and product research and development. When there is a shortage of pea starch supply, investors' production will be more or less affected, even worse for those who set up a new production line on the payment of giving up the previous one. All the efforts will just become a waste of time and money. As one informant said:

> *"I would definitely care about how much pea starch the supplier can constantly supply. Let's say, the new product added pea starch is produced, and fortunately, customers find it tastes good. Then the sales of my product will increase. If you [pea starch suppliers] cannot provide me with enough pea starch, the success of this pea-starch-based product will become a one-time business. I gave up my previous production line for this new product, while you told me there is a shortage of raw material when the product is successfully produced. Then I will never use this raw material anymore."*

The concern about enough supply is connected to food processors' product quality stability. As mentioned by the animal feed company:

> *"The supply is also something we would think about. Usually, we do not want to use one thing today, and switch to another tomorrow. This means a shift for our product composition. It is somewhat bad for our product quality. This will weaken the stability of our product quality."*

It is worth mentioning that frequent delay of cargo delivery is considered as one kind of supply perturbation. Seasonal interruption of transportation becomes a concern for those food processors who have special restrictions on the best-before-date of raw materials.

Only one snack company holds a different view and does not worry about the supply issue. This interviewee is confident that pea starch is available anywhere and there will never be such a risk.

Product quality stability

Only a pea starch supplier who can maintain or improve its product quality constantly will become a long-term partner for Chinese food manufacturers. Because the consistency of quality will create buyer loyalty to the products and brands, and buyers tend to feel comfortable to continue cooperation if good maintenance on this quality satisfaction is conducted (Egan, 2004, as cited in Yusuf & Trondsen, 2014). Of course, it takes times to see whether or not a supplier can well control product quality consistency. Chinese food producers examine this characteristic mainly by comparing product quality of different batches. A supplier who strictly complies with fixed production standard is believed to make better control of product quality.

To sum up, most Chinese food producers want to ensure supply, mainly through a supplier's production capacity and its allocation strategy, before they make a decision on a pea starch investment. And it takes time for them to examine the stability of suppliers' product quality through batches checking. Some transportation elements, such as frequent delivery delay and seasonal transportation interruption, are regarded as supply uncertainty by some food producers.

Services

The maintenance of buyer satisfaction with services is of great importance, because buyers will prefer to cooperate with whom they feel more comfortable to work with (Egan, 2004, as cited in Yusuf & Trondsen, 2014). Also, such a continuous cooperation helps to save time and enhance efficiency.

Sample offering

Before executing the replacement of raw materials, Chinese food producers would ask for a pea starch sample from the supplier to examine the performance of pea starch in their products.

Participants hold different views on free samples. Whether pea starch suppliers should offer free samples may depend on the role they play in the deal. The comment from an extruded food company is a good example:

> *"If it is the supplier who hopes to introduce his pea starch to the industry, most of the time, he'll provide free sample to his potential customers and make improvements based on their request. On the contrary, if a food processor proactively requests for pea starch sample from the supplier, it is the food processor who should pay for it. These two situations are completely different."*

Most participants connected the sample issue to the norm of their industries. In other words, whether samples of similar raw materials are normally offered free in their industries. Companies in which pea starch will serve as the main raw material, such as the vermicelli company and the animal feed company, indicated that a reasonable charge for the sample is understandable. The reason for this is that they need a considerable amount of sample to complete the test on pea starch application. It will involve some costs. However, in the application of candy and jelly, for example, pea starch seems to be a potential additive. A candy and jelly producer interviewed took it for granted that suppliers should offer free pea starch samples. Because this is common in their industries. Moreover, they are satisfied with their existing additives, and it is the supplier who request them to give a try on his product.

But there exist some exceptions. For example, although a free sample is common in his industry, a meat ball producer still can accept a non-free sample. This is closely related to his attitude towards new ingredients. He is always willing to try new stuff and make improvements on his products.

To sum up, a pea starch sample is required by Chinese food processors for an application test before making any replacement decisions. "Free sample or charged sample" mainly depends

on the convention of their industries. This is related to the volume of pea starch sample required for an examination, and whether or not the supplier is a proactive introducer for pea starch.

Product support

Attitudes towards product support services vary from vermicelli producers and non-vermicelli food producers.

Pea starch is a traditional raw material for Chinese vermicelli industry. Each vermicelli company has its unique restrictions on temperature, ratio of raw materials and production process, etc. Everyone has their own standard for vermicelli production. Whatever pea starch is used, all the restrictions under the standard should be followed. The vermicelli producer determines the ratio of pea starch and other ingredients, rather than the pea starch supplier. As a result, instructions and suggestions from the supplier become superfluous.

Unlike the widespread use in vermicelli production, pea starch is an unknown for participants from other target industries. Pea starch providers' instruction on how to use this new raw material is indicated to be essential. Also, follow-up support for customized adjustments is expected if some problems are found after following the instruction. All these efforts can increase the success rate of pea starch application in those target companies, enhancing the introduction of pea starch into Chinese food manufacturing industry. One candy producer told the investigator:

> *"We would give it a try if the pea starch company can provide with a formulation that we can refer to. Normally, if a supplier wants to sell a new raw material to our company, he will hold a seminar to introduce his product and show us the suggested formulation. Based on this formulation, we know how we should apply the raw material into our product."*

The owner of a company producing candy and jelly said:

> *"If you want to introduce this new ingredient to me, you need to demonstrate how to use your product to make jelly. If you finally make it, that means the pea starch can be used in jelly. While if you cannot make a demonstration, at least you should give me the User Guide, telling me what the percentage of CMC, gel, pea starch …should be. Then I'll follow this User Guide. And if the jelly comes out to be great, I'll definitely take this new ingredient into consideration. But without the demonstration or User Guide, how can I try the pea starch you provide?"*

An extruded food company replied:

"Support from the pea starch supplier will make a big difference to the result of pea starch application. If the supplier wants our company to try his product, he needs to give us some instructions. For example, should I boil it first? Do I need to get it sterilized before I use it for extruded food production? … These instructions are important for the pea starch's "pass" in the product examination."

In conclusion, product support of pea starch may be unnecessary for Chinese vermicelli industry, but it plays an essential role in the introduction of pea starch into other target industries. Suppliers can provide a formulation for reference or show how the product is made with pea starch. It would be a benefit if they can work with their customers to make appropriate adjustments and figure out schemes that fit their customers well.

Brand

Brand name

Attitudes towards the brand name are divided into two groups. Some food processors do not care about what brand of the pea starch is. They insisted that no matter how well-known the brand is, what they care about is whether the pea starch is able to perform well in their products.

On the contrary, some food manufacturers acknowledged that they take the brand name into consideration. Although the preferences for the type of brand are seemingly different, the brand is somewhat chosen based on the suppliers' maturity of technology. The animal feed company prefers to cooperate with large-size companies:

"Talking about by-products, especially those involve complicated processing technologies, large-size companies would be our first choice. Because they have stronger financial basis, and they are more likely to make investments in product research and development. Also, they tend to possess advanced technologies. I think their product quality is more reliable."

Another preference is posed on a brand with successful cases. It is always easier for a brand with persuasive cases to win trust among its potential customers. This is what the jelly processor mentioned:

"Only if the pea starch company's product has been successfully applied in jelly production will we try its product. This is a prerequisite. If one of my competitors has tried this new ingredient and it turns out that his product tastes better, I tend to find out the supplier and try the same brand."

Also, if their customers have a preference on a specific brand for raw materials, food manufacturers will pick up that brand to satisfy the buyers.

There is one interesting comment on this brand name topic. Chances are that Chinese food processors will show no interest in the brand name at present. Mainly because the pea starch is totally new for them, and any brand is an unknown. Only after the pea starch is adopted widely in China, will people start to care about the brand name.

Domestic/imported brand

All the participants seem to reach a consensus on "Whether domestic or imported products are preferred?". Still, they consider product quality and Price and cost as their top two concerns. This means the more cost-effective the pea starch is, the more likely it will win the game, no matter if it is made in China or imported from a foreign country. But if the cost-effectiveness is almost the same, food processors tend to choose domestic sources because of the shorter delivery time, the convenience of product traceability, etc.

Canada brand

For most interviewees, their impression of Canada makes no difference to their preference between Canadian pea starch and other pea starch. Again, they focus more on the pea starch itself no matter where it is processed. Although one participant noted the rigid food safety restriction in Canada is a strength for Canadian pea starch, other informants thought this effect is quite limited. Because for most Chinese food producers, what they need is to meet the requirements of food manufacturing rules in China and satisfy their customers' demand. In other words, once the pea starch is legally allowed by relevant rules, it will be regarded as safe. Any higher level of food safety makes no sense to those food processors.

Worth mentioning, for most vermicelli producers and the only non-vermicelli participant who is using dried peas, their pea starch and dried peas being used are both originated from Canadian dried peas. As Kagochi (2007) stated, the use of higher quality inputs can affect product quality. Therefore, another possible explanation for the ignorance of Canada brand is because the same input is used, which tends to narrow down the product quality difference between Canadian pea starch and other pea starch.

Although political factors are mentioned by one participant when asking about Canada, no more comment on this point is noted among other participants. In some other cases, political factors can bring about price gyrations and supply instability, such as the US soybean experience mentioned by an extruded product processor in this study. Probably the impact of political issues is not that significant when it comes to pea starch.

To sum up, brand concerns in terms of the brand name of pea starch vary from company to company. Those who do not care are willing to try any single brand, out of their insist on the applicability of the pea starch. However, those who think highly of the brand name, make their choices for different reasons, such as a bigger-sized company, a supplier with persuasive stories, and a brand requested by customers. Most participants prefer domestic (Chinese) brand against imported brand, if product quality and Price and cost are almost the same. Canada brand does not earn preferences from most participants.

Success stories

For the vermicelli industry, where pea starch is being used as the main raw material, pea starch suppliers' previous experience seems insignificant. It is no longer a problem whether it can be applied in vermicelli industry, but how well this brand of pea starch can satisfy vermicelli processors' requirements and persuade them to change their suppliers.

As for non-vermicelli participants, pea starch is indeed a new ingredient. A previous customer in a specific industry helps pea starch suppliers win trust and get an opportunity from a potential second buyer in that industry. A case from the Chinese market sounds more persuasive because it avoids the impact resulted from the discrepancy of different countries' food manufacturing rules. As mentioned earlier in this study, the difference in food manufacturing rules between China and North America may lead to poor performance of pea starch in the former market but excellent in the latter. A success story of the potential buyer's competitor would even be better. As an animal feed participant mentioned:

> *"Absolutely, if pea starch has been used successfully by some companies, suppliers will find it easier to introduce this new by-product into our industry. Of course, there should be someone who are willing to give it a try, but successful cases will make it more persuasive and help to speed up the introduction of pea starch into the industry."*

It is worth mentioning that success stories may become a determinant for some Chinese food processors on whether or not to take this step. These processors are satisfied with their existing raw materials, and the whole industry gets used to what is being used. For them, this step means the risk of wasting time and money, while a persuasive story tends to guide those investors to see the bright side of the gamble.

On the contrary, some food processors denied the important role of past cases. One reason for this is the production process differs from company to company, the adoption of pea starch in one company cannot guarantee its applicability in another. The extruded food company indicated the following:

> *"We don't care too much about this (success stories). Because in the extruded snack industry, the formulation and production process of a company are different from those of its competitors. For example, some companies fry their products before an additive is added. While others get their products fried after spreading the same additive. This is closely related to a company's production process. I don't think the past cases make any sense."*

Of course, there is such a group, who do not want to miss any business opportunity and are willing to be the first to try something new, like the meat ball producer who was interviewed. Success stories seem to be insignificant for him.

In summary, success stories would be a strength for pea starch suppliers to introduce their products to Chinese food manufacturing industry. Previous cases of pea starch use in the Chinese market, such as competitors of potential buyers, sound specifically attractive. The vermicelli industry is a totally different case because pea starch is being widely used as a raw material. Success stories here are indicated to be ignored.

Supply chain

Chinese branch/distributor

As for Canadian pea starch suppliers, all the participants have a preference for those with a branch or distributor located in China. Some of these informants even regard it as a prerequisite. For one thing, participants reckon that the volume of pea starch they will purchase is not that large. Buying pea starch from the Chinese branch or a Chinese distributor seems like a better choice. For another, the delivery time will be shorter if there are stocks in the warehouse located in China. Most non-vermicelli interviewees hope they can receive the cargo within one week. The distance

between Canada and the Chinese market limits the freshness of commodities and Canadian pea starch suppliers' ability to deliver pea starch as quickly and reliably as their Chinese counterparts do (Vlachos & Patsis, 2004). However, a warehouse located in China can eliminate such a weakness. Also, with a storehouse in China, a pea starch company can mitigate the negative impacts of the uncertainty of voyage transportation on its Chinese customers.

Seasonal transportation interruption

With regard to the seasonal interruption of transportation system in Western Canada, most participants indicated that this is unavoidable and what they can do is to stockpile pea starch before the interruption happens.

The only exception is an animal feed company, who regards the seasonal delay as supply instability. Because the company have a special restriction on the best-before-date of their raw material, the informant concerns that the delay may result in the expiration of the raw material. As Kagochi (2007) stated, reliable and timely delivery plays an important role in maintaining physical attributes of agricultural commodities.

4.1.4 How well do Canadian pea starch suppliers satisfy Chinese customers' demands?

Knowing Chinese food producers' concerns, it makes sense to see how well Canadian pea starch suppliers currently match their Chinese buyers, because this provides supports for the competitive analysis section followed. Table shows the matching result of Canadian suppliers to Chinese buyers.

Table 6 A Match Between Chinese Buyers and Canadian Pea Starch Suppliers

Chinese buyers' concern	Supplier 1	Supplier 2
Product quality and performance ❖ Product Quality ❖ Convenience	Unknown ❖ Product quality Mismatched ❖ Convenience	Matched ❖ Product quality Matched (partly) ❖ Convenience
Price and cost ❖ Price ❖ Cost	Matched (partly) ❖ Price Unknown ❖ Cost	Matched (partly) ❖ Price Unknown ❖ Cost
Food safety	Unknown	Matched
Supply capacity and stability ❖ Production capacity and quantity stability ❖ Product quality stability	Matched	Matched
Services ❖ Sample offering ❖ Product support	Matched (partly)	Matched (partly)
Brand ❖ Brand name ❖ Domestic/imported brand ❖ Canada brand	Matched	Matched
Success stories	Matched (partly)	Matched
Supply chain ❖ Chinese branch/ distributor ❖ Seasonal transportation interruption	Mismatched	Mismatched

Product quality and performance

For Supplier 1, Product quality is unknown because they never sell products to China. Although many pet food companies are using their pea starch and have no problems, it is unknown whether or not the same applicability works in the Chinese market. As mentioned earlier in this study, it is related to a country's rules of food manufacturing and consumer preference. Supplier 1 mismatches Chinese buyers' expectation in terms of Convenience. Although the production line

reconstruction issue is still unknown at the point of data collection, Supplier 1 fails to provide Chinese buyers with more convenient products because they neither have a Chinese branch nor cooperate with a Chinese distributor. As for Supplier 2, as the supplier said, *"We already sent our product to China and they love our pea starch."*, product quality of their pea starch somewhat fits the Chinese market well. With no reconstruction required in their previous Chinese cases, they achieve convenience in their product. Their trading house in China also contributes some convenience, but only limited to some relevant services, because they do not have a warehouse in China and pea starch is directly transported from their Canadian plant to Chinese customers. To sum up, Supplier 2 has a decent performance in terms of Product quality and partly matches expectation on convenience products.

Price and cost

Because both suppliers' target buyers, non-vermicelli participants, have never used pea starch, a direct price comparation is unavailable. However, there are some takeaways from an indirect price comparation. Pea starch does not sound persuasive compared with many other starches, but attractive to candy/jelly producers who are using gels. This indicates that pea starch is likely to be refused by some starch users at the very beginning but accepted by non-starch users. Therefore, both Supplier 1 and Supplier 2 partly match Chinese participants' Price expectation. As discussed earlier, it would finally come to a cost comparation. However, it is impossible to compare cost at the point of data collection, because a cost comparation would be available only after a sample examination. Therefore, the matching for cost is unknown at this point.

Worth mentioning, there is seemingly a conflict between Supplier 1 and Chinese buyers. The former is looking for a higher-value purchase market not a low-price approach, because they can get rid of their pea starch in the domestic market and there has to be a price increase to persuade them to sell overseas. However, most Chinese buyers would only accept a cost-effective substitute. Thus, Supplier 1 need to have some premiums in Product quality and performance that make sense to those buyers to win the game. Instead, one Canadian isolated pea starch informant's strategy is definitely a good fit. Because this informant aims at pea protein, and in terms of pea starch, they are willing to offer a lower price to Chinese buyers if the volume purchased is high enough, which Chinese vermicelli companies would definitely satisfy.

Food safety

When talking about food safety, Supplier 1 emphasized their human-graded certification and FSSC 22000 [6]. While Supplier 2 emphasized that they are approved by CFIA[7] and qualified for food industry. But considering the three normal ways that Chinese participants use to verify food safety, namely Chinese food manufacturing industry's permission, Chinese Customs' examination, Chinese buyers' unique standards, qualified for human race consumption, food safety management system, and approval from Canadian food safeguarding agency would certainly not work as well as both suppliers expected. Also, because Supplier 1 has never sent their products to China, it is fair to say whether Supplier 1 can well match Chinese buyers' food safety expectation is still unknown. One exception is animal feed producers, because as mentioned earlier, for these producers, certified human-graded sounds more trustful in terms of food safety. On the contrary, Supplier 2 greatly matches Chinese buyers' expectation, because they already sent their pea starch to China and no food safety issues happened.

As for Chinese buyers' unique standards, there is nothing to discuss at this point, because this can be resolved only after testing. Here comes an interesting point for Supplier 2. Using their previous Chinese cases speaks louder than throwing out their approval from CFIA, because the former indicates that their pea starch is qualified for Chinese food industry or has passed Chinese custom's examination, but the Canadian approval they provide does not guarantee their products are qualified for Chinese food safety standard.

Supply capacity and stability

Considering pea starch serves as the core raw material for vermicelli, normally, a vermicelli processor's demand on pea starch should be way more than that of a non-vermicelli food producer. Therefore, in this study, if a Canadian supplier can satisfy vermicelli participants' volume demand, this supplier is considered able to satisfy non-vermicelli buyers' volume demand.

Both Supplier 1 and Supplier 2 produce way more than vermicelli participants need. Therefore, both suppliers hold a matched production capacity. Also, both plants run all year round,

[6] FSSC 22000 is a food safety management system and distinguishes from other food safety certification Schemes because of its focus on certifying the Food Safety Management System of an organization (FSSC 22000, n.d.).

[7] The Canadian Food Inspection Agency (CFIA) is a regulatory agency that is dedicated to the safeguarding of food, plants, and animals (FPA) in Canada (Wikipedia, 2021(d)).

which enables them to constantly supply Chinese buyers with the volume requested. But again, Supplier 1 would put priority to allocate to Chinese buyers only if there is a decent premium over what they are getting in domestic market. As for quality stability, which technically need time to prove, Supplier 1's food safety management system is a sound support for their good control of product quality consistency. As for Supplier 2, besides CFIA's approval, their rigorous follow-up procedures for quality enables them to provide buyers pea starch with stable quality. Therefore, both suppliers successfully match their Chinese buyers' expectation in Supply capacity and stability.

Services

As for product support, Supplier 1 is willing to help in pet food side, but unable in human food side, because they indirectly sell pea starch to human food end-users through an ingredient company, and that is out of their knowledge and control. However, infield instruction and customization would be infeasible because they do not have a Chinese branch. Therefore, services from Supplier 1 are quite limited. As for Supplier 2, they can offer free samples and suggest how to use their pea starch, with knowledge about what kind of stuffs (e.g., starch, gel) buyers are using in final products. The supplier is unable to provide a formulation for reference because formulations of previous cases stay with the companies. They can adjust the percentage of starch/protein/fiber in their product if requested, but other than that, any formulation changes from their end sound infeasible. This is because pea starch is just part of the ingredients that buyers use to make their final products. Whether pea starch works or not, all depends on buyers' formulations and testing. Therefore, instruction on how to use their product will be provided but excluding infield instructions. However, formulations for reference and some customized adjustments from supplier end are unavailable. Supplier 2 only meets part of Chinese buyers' expectation for Services.

Brand

As mentioned earlier, for Chinese participants who care about the brand name, they make their choices for different reasons. Supplier 1 would be attractive to pet food producers who focus on persuasive stories and likely appeal to success-story listeners in the human food side. Although Supplier 1 is relatively new, they are working with a big company to sell pea starch to human food market. This would somewhat be attractive to buyers who prefer to work with large-sized

companies but probably not as attractive as a direct sale. Besides success-story listeners, Supplier 2, as an international conglomerate and with long history, they would enjoy great popularity among those large-sized-company lovers. Of course, either of them would be chosen if luckily marked by Chinese food producers' customers. Therefore, both suppliers seem to fulfill Chinese buyers' different preference for Brand. But again, if these suppliers cannot excellently beat their Chinese counterparts on cost-effectiveness, as discussed earlier, they would still lose the game.

Success stories

Supplier 1 has many success stories in pet food industry in North America and works with an ingredient company, who do a human food sell for them, but the supplier has not yet sent their pea starch to China. Therefore, Supplier 1 just partly satisfies Chinese buyers' demand in terms of Success stories. Similarly, Supplier 2 sells most of their pea starch to North American pet food companies. A less proportion is sold to animal feed and human food side. But they have some persuasive Chinese cases, such as pea cake. Therefore, Supplier 2 is likely to matches most Chinese buyers' expectation for Success stories, because their customers cover a wide range of industries, and they have Chinese stories to tell.

Supply chain

Without a branch/distributor located in China, both Supplier 1 and Supplier 2 are unlikely listed as a preferred candidate, because all non-vermicelli Chinese participants prefer to work with a supplier who has such a branch/distributor. They will lose the game if the buyers regard the Chinese branch/distributor as a prerequisite. Although Supplier 2 has a trading house in China, this location fails to eliminate most Chinese participants' concern here, because it is not used as a warehouse, then it cannot narrow down the delivery time. According to Supplier 2, normally, it takes 21 days to transport their pea starch to China and maximum 1 month during seasonal transportation interruption period. Obviously, without a Chinese warehouse, suppliers are unable to meet the one-week expectation of most non-vermicelli participants. Therefore, both Supplier 1 and Supplier 2 mismatch most non-vermicelli participants' expectation in terms of Supply Chain.

Instead, one Canadian informant who produces isolated pea starch has processing facility in China. Pea starch coming out of their Canada plant is promised to be shipped to their China

plant, which sounds like a warehouse and good for this Canadian isolated plant to plan replenishment to avoid seasonal disruptions.

To sum up, Canadian pea starch suppliers are found to completely mismatch buyers' expectation on Supply chain and partly mismatch buyers' demand in Services. And there are some unknows and mismatches on Canadian suppliers' ability to satisfy their buyers' need on both Product quality and performance, and Price and cost.

4.2 Competitive Forces Analysis for Canadian Pea Starch

Base on the pre-modified Competitive Forces Framework for New Entrant in Section 2.4 and data presented in Section 4.1, this section analyzes competition structure faced by Canadian pea starch as a new entrant (also as a substitute) to the Chinese market, and suggests strategies for the new entrant to gain a competitive position.

4.2.1 Threat as a New Entrant

The threat as a new entrant is the first force to analyze. The research subject in this thesis, Canadian pea starch, is rather a newcomer to the Chinese market. Thus, if existing pea starch companies face high threats from Canadian pea starch (the new entrant), those existing companies will find it harder to compete. This scenario is in favor of the Canadian new entrant to enter the Chinese market and gain competitiveness there. The threat as a new entrant depends on: (1) how high the entry barriers facing the new entrant; (2) how likely incumbents are expected to reaction.

Entry barriers

The higher the entry barriers, the more difficult for newcomers to enter and compete in the market. Conversely, less threats from these newcomers would pose on existing pea starch companies. Here are major sources that determine entry barriers facing Canadian pea starch.

Demand-side benefits of scale work and build up entry barriers, when a buyer is more willing to pay for products/services provided by a company because there is an increasing number of other buyers of that company. As for vermicelli market, incumbents' demand-side benefits of scale are limited because most vermicelli participants ignore successful stories and brand. As for other markets, on the contrary, Canadian newcomers possess demand-side benefits of scale in

markets, where they have a lot of success cases. Although most of them are North American cases, it is still a strength for these newcomers, when Chinese cases are quite rare, and as discussed, success stories are a major concern for most non-vermicelli participants. Therefore, the large customer base of Canadian participants eases entry barriers to the non-vermicelli consumer market and enhance the threat as a new entrant.

Customer switching costs is another source of entry barriers. The larger the switching costs, the less likely customers will change suppliers. Convenience plays an important role here. The concern from non-starch users about equipment reconstruction would incur extra costs, such as investment in new equipment and cost to retrain employees. Switching to a supplier without a Chinese branch/distributor leads to more efforts to access pea starch and relative services. Unable to provide product support, such as formulation for reference and support for customized adjustment requires non-vermicelli buyers extra time and money to explore this ingredient substitute. In all, considerable switching costs would incur, if Chinese buyers switch to the Canadian suppliers involved, because both Canadian participants somewhat fail to satisfy buyers' needs on Convenience and Product support. Therefore, Customer switching costs is a major source of entry barriers for Canadian new entrants. But promising pay-back that surplus switching costs help to narrow down entry barriers.

Capital requirements is a source of entry barriers. The need of huge capital requirements limits the pool of likely entrants. The barrier is particularly great when investments in up-front advertising or research and development are required because such investments are unrecoverable and therefore hard-to-finance. However, attractive industry returns tend to eliminate the negative impact of capital requirements. Pea extraction involves large capital investments in processing facility and technology, which indeed benefits Canadian newcomers by preventing some likely entrants (e.g., plant-based trend followers) to compete. Of course, this effect should not be overestimated, considering the promising returns of plant-based products. As for vermicelli market, compared with incumbents, Canadian newcomers need capital to build up customer credit in the Chinese market, which imposes some entry barriers. As for other markets, the capital for earning customer credit incurs for both incumbents and newcomers, because pea starch application in these markets is relatively new or rare in China. Thus, it is not an entry barrier here. But Canadian newcomers may be less burdensome in investment in R&D because they are relatively

sophisticated in those applications, compared with Chinese incumbents. Conversely, this capital requirement makes these newcomers advantageous and enhances the threat as a new entrant.

Some *incumbency advantages independent of size* can hinder the entry of potential newcomers. Advantages included are proprietary technology, easy access to best raw materials, geographic locations preferred, brand identities held, or experience cumulated that enables production efficiency. Obviously, Chinese incumbents own the most favorable geographic locations, especially when most Canadian newcomers without a Chinese location serving as a warehouse. It affects Product quality and performance of Canadian pea starch by ruining newcomers' ability to achieve Convenience. It also limits the Services aspect because Canadian participants can only provide limited product supports to Chinese consumers. Furthermore, it makes Canadian newcomers unfavorable from the Supply chain perspective, because all Chinese participants prefer suppliers with a Chinese warehouse, some participants even regard it as a prerequisite, and a few buyers need it to mitigate the risk of Seasonal transportation interruption to ensure within best-before-date. Therefore, the geographical advantage of incumbents imposes an entry barrier for Canadian newcomers. Compared with Canadian newcomers, incumbents have established brand identities in the Chinese market. The Brand name effect influences some Chinese participants' food choice and increases incumbents' chance to be picked up by Chinese buyers' buyers. Chinese participants' preference on Domestic brand makes it in favor of Chinese incumbents, especially when Canada brand itself has no preferential attribute among buyers. All these facts make incumbents' brand identities a strength and hinder Canadian counterparts' entry to the Chinese market.

Entry barriers may stem from *restrictive government policy*. Government policy can affect new entry directly, or indirectly by amplifying/nullifying the other entry barriers. There is a national industry regulation for Longkou vermicelli processing, but it imposes restrictions only on dry peas but not on pea starch. Also, most Chinese pea starch are extracted from Canadian dry peas. Moreover, according to Canadian participants, they do not face any difficulty when exporting pea starch to China. No political restrictions on the export of this product are found so far. Therefore, there is little political entry barriers when Canadian pea starch enters the Chinese market.

Expected retaliation

Expected retaliation is another evaluation rubric for the threat as a new entrant. The less likely entrants believe incumbents may react, the more likely they would decide to enter an industry, because the market environment seems like more friendly for newcomers to compete.

As for vermicelli segment market, reactions from incumbents are expected to occur for two reasons. For one thing, incumbents tend to reduce prices to retain market share. It obviously would pose more pressures on Canadian newcomers and make it harder to fight on price and cost. For another, the vermicelli market already saturates, and newcomers need to seize market share from incumbents. As for non-vermicelli markets, technically speaking, incumbents are not qualified to retaliate, because they are rather naïve in these markets.

Therefore, preferable geographic locations and established brand identities of incumbents impose entry barriers for Canadian pea starch, but no barrier in the form of restrictive government policy. The entry to vermicelli segment would face barriers resulted from capital requirements and expected retaliation. The customer switching costs incurred is the main barrier to enter non-vermicelli consumer markets, but interestingly, the entry to non-vermicelli segment imposes converse barriers to Chinese incumbents in terms of demand-side benefits of scale and capital requirements. Thus, Canadian pea starch seems to impose less threats to vermicelli market than to non-vermicelli markets. In other words, compared with vermicelli market, non-vermicelli markets seem like a better choice for Canadian pea starch companies to shape a competitive position.

4.2.2 Power of Suppliers

The second force is the power of suppliers. Powerful suppliers tend to charge higher prices or choose to provide limited quality/services, or make the cost shifted to their customers. Through all these ways, they then squeeze profitability out of their customers. This makes it harder for the customers to gain profits in their own industry, which is disadvantageous for a customer who wants to gain competitiveness. In this section, the supplier group involves raw material suppliers (pea producers) and third-party logistics suppliers. Dependance and replacement are two aspects to evaluate how powerful the supplier group is.

Dependance

Dependance includes two dimensions, either how heavily a supplier depends on a customer to earn money, or how heavily a customer depends on its supplier due to the cost of switching supplier.

If a supplier group depends heavily on a particular customer for its revenues, it is not that powerful. Raw material suppliers depend heavily on pea extraction industry because the majority of dried peas globally are consumed by pea extraction industry to produce pea ingredients (Greuel, 2020), and this trend tends to continue with the need to extend pea protein extraction capacity. However, third-party transportation suppliers are independent on their pea starch business, because compared with other agricultural commodities, pea starch only occupies a minor portion of these suppliers' business in Canada. This makes it harder for both Canadian participants to remove negative impacts of seasonal transportation interruption in Western Canada, because they have no Chinese warehouse. As a result, it ruins Canadian pea starch's Supply chain performance. Thus, Canadian newcomers' raw material suppliers are powerless, while their third-party transportation suppliers are very powerful.

Customers are regarded relatively dependent on their suppliers if playing a supplier off against each another is not easy because of high switching costs. In this case, suppliers possess some power against the customers. Technically speaking, raw material suppliers have some power here, because many Canadian pea starch companies locate their facilities near to pea producers and some of them even launch grower programs. But the effect should not be overestimated, because these suppliers also have switching costs in this relationship. From this perspective, the power of supplier for Chinese incumbents seems like lower, because their locations are far away from their Canadian dried pea suppliers.

Replacement

Replacement includes two situations, either a supplier is replaced by another supplier, or the supplier replace its customers.

Suppliers would be powerful if products they provide are differentiated and unlikely to be replaced by competitors who also provide this type of products. Some Canadian pea starch companies' grower programs are underway to customize their raw materials, and this is likely the trend for the industry. As a result, growers would offer dried peas with differentiation. Technically speaking, it makes it harder for a supplier's dried pea to be replaced and enables the dried pea

supplier to possess some power, but the power is converse in such a cooperation, thereby the power of suppliers is limited.

Suppliers would be powerful if they can credibly threaten to integrate into buyers' industry and replace their buyers. Although pea extraction companies make much more money relative to their pea growers, it is unlikely that pea growers can easily enter the pea extraction industry, because this industry involves large capital requirements in equipment, processing technology, and R&D. Therefore, the supplier group is unlikely to replace their pea starch customers, thereby seem like powerless.

To sum up, raw material suppliers are relatively powerless, because of their high dependance on pea starch extraction industry and inability in replacement. This is because pea starch processing industry is their biggest buyer, and they are unable to integrate into this industry. Although raw material suppliers are seemingly powerful due to high switching cost and product differentiation, the power is limited due to the converse power in a cooperated relationship. Canadian pea starch's third-party logistics suppliers are powerful due to their low dependence on pea starch business because their pea starch business is not a major revenue earner. Thus, more involvement or leadership in the cooperation would benefit Canadian pea starch companies to limit negative effects of raw material suppliers' power. For example, cooperation can involve during seed breeding stage or Canadian pea starch companies may directly provide seeds to their pea grower cooperators. To make it in favor of itself to gain competitive advantage, the Canadian new entrant really needs to find ways to mitigate negative impacts derived from third-party logistics suppliers' power. Specifically, the newcomer can mitigate the risk of seasonal transportation interruption in Western Canada by establish a Chinese location serving as a warehouse, such as a Chinese branch/distributor.

4.2.3 Power of Buyers

The third force is the power of buyers. Powerful buyers tend to force price reductions, and require better quality or more service, at the expense of suppliers' profitability. In this way, the power of buyers imposes some pressures on suppliers when suppliers want to achieve competitiveness in their own industry. Buyers in this section are Chinese food producers from

industries where pea starch can be applied. Similar to the Power of Supplier pillar, dependance and replacement are two metrics to evaluate how powerful buyers are.

Dependance

Dependance includes two dimensions, either how heavily a customer's suppliers depend on it to run their business, or how heavily a customer depends on its supplier due to the cost of switching supplier.

A buyer can drag its suppliers to depend on it if there are few buyers, or if it purchases in relatively large volume. In this case, buyers are powerful. Vermicelli producers are powerful because pea starch is the major raw material, and they are large-volume buyers. Although the volume that non-vermicelli food producers can consume is lower than their vermicelli peers, Canadian pea starch suppliers still have decent dependance on these food producers, because pea starch application in these industries are at the early stage and there are only a few buyers in the Chinese market. Thus, these non-vermicelli buyers tend to be powerful.

Buyers are regarded relatively dependent on their suppliers if playing a supplier off against each another is not easy and involves high switching costs. In this case, buyers are not that powerful. Vermicelli customers are powerful and independent on their raw material suppliers because these buyers just switch out of a pea starch supplier into another, where few switching costs are involved. Other starch users are likely moderately dependent on and powerful against Canadian newcomers because switching to pea starch may incur limited cost, considering it is another type of starch but still a starch. However, non-starch users appear to be most powerless and highly dependent on pea starch suppliers because the switching cost is relatively high, where production line reconstruction likely occurs at the cost of Convenience.

Replacement

Replacement includes two situations, whether buyers can easily find an alternative to replace products offered by their suppliers, or whether buyers tend to replace their suppliers and produce the products themselves.

Buyers find it easy to replace products provided by suppliers if the products are undifferentiated. In this case, buyers would be powerful against suppliers. To the best of the researcher's knowledge, pea starch industry is not highly differentiated. But grower programs that

are carrying out by some Canadian pea starch companies induce differentiation on raw materials. If dried peas are differentiated, pea starch produced are likely differentiated, because raw materials greatly affect attributes of products produced (Kagochi, 2007). This differentiation finally makes it harder for Chinese buyers to find an equal alternative, thereby limit these buyers' powerfulness.

Buyers are powerful if they can credibly threaten to stop buying raw materials from suppliers and produce the products themselves. Chinese vermicelli producers used to process peas themselves to get pea starch, but steadily buy pea starch from large-size pea processing plants, due to cost-effectiveness and strictive environmental regulations in China. Thus, these buyers unlikely would move back to produce pea starch themselves again. Also, it is unlikely that non-vermicelli food producers will produce pea starch themselves, because the volume that they can consume is relatively low and pea extraction indeed involves huge investments in equipment, R&D, etc. In all, it is unlikely that Chinese buyers would replace their Canadian pea starch suppliers, then these buyers are not that powerful.

Vermicelli producers are price sensitive because pea starch is the major raw material and accounts for a significant fraction of their procurement budget. Also, it is unlikely that the improvement of non-price factors can drive up because vermicelli they produce. In contrast, non-vermicelli producers are less sensitive to price, because in most cases, pea starch serves more like an additive and only takes up a small part of buyers' costs.

Therefore, compared with non-vermicelli counterparts, vermicelli buyers are more powerful due to higher suppliers' dependance against buyers and higher risk of replacement. This is because vermicelli producers are large-volume purchasers and only low switching costs would involve if changing suppliers. Also, they can threaten to produce pea starch themselves and they are highly sensitive to the purchasing price of pea starch. As for non-vermicelli markets, although there are few buyers in the markets, these buyers are relatively powerless because there are switching costs when they change to pea starch and they are unable to produce pea starch themselves, especially when they are not that sensitive to pea starch price. Thus, non-vermicelli consumer markets seem like a better option for Canadian new entrants to shape a competitive position.

4.2.4 Threat as a Substitute

The fourth force is the threat as a substitute. Threatening substitutes are competitive candidates to win the substitution game. In this thesis, pea starch is rather a potential substitute for other ingredients. Therefore, this section analyzes the threat level of pea starch as a substitute to other ingredients. The ingredients to be substituted includes other starches and gels. Cost-effectiveness and preference are two perspectives to evaluate the strength of this force.

Cost-effectiveness; Preference

The threat as a substitute is high if this substitute's price-performance trade-off sounds attractive, or if the environment is in favor of this substitute and makes it preferential or regulatorily exclusive.

The threat to other starches

Pea starch is absolutely a successful substitute in vermicelli industry. A Chinese national industrial regulation defines that, only noodles made with mung bean/pea called Longkou vermicelli (mentioned as Chinese vermicelli/vermicelli in these thesis). In other words, starches other than pea starch/mung bean starch are incomparable. It greatly limits the pool of likely substitutes. However, mung bean used to be the major raw material for Chinese vermicelli, but outcompeted by pea later, due to the lower price and the satisfying product quality of pea.

Compared with most commonly used starches, pea starch is highly appreciated for attributes such as thickening and gelling properties, but mostly criticized for its higher purchasing price. At the point of data collection, the trade-off between product quality and price that pea starch can achieve is still unknown, because it requires a sample test. But the higher price of pea starch makes it disadvantageous, because as discussed earlier, some Chinese participants tend to judge pea starch's potential before the sample test happens. And the purchasing price is likely used as an evaluation rubric when other starches being used are satisfying. Thus, pea starch as a substitute, is not that threatening.

The threat to non-starch stuffs

In this section, only gels are analyzed, because Chinese non-starch users involved are from industries where pea starch is expected to substitute gels.

Pea starch is a threatening substitute for gelatin in candy industry. With relatively low price and decent gelling properties, especially with the plant-based attribute that gelatin (animal-

based gel) cannot compete, pea starch is a highly cost-effective substitute. Although the animal-based concern only heard from one candy participant, the prosperity of plant-based industry would finally in favor of pea starch.

As for plant-based gels being used in candy/jelly industry, such as pectin, they also face some threats from pea starch. The significantly competitive price combined with the decent gelling properties of pea starch, also without sacrificing health benefits, makes it a good substitute to partly replace those plant-based gels.

In summary, pea starch does not sound threatening to other commonly used starches in non-vermicelli markets, due to its nonattractive cost-effectiveness against those starches. However, pea starch's cost-effectiveness enables it to successfully substitute mung bean starch in vermicelli industry, and makes it a threatening substitute to non-starch stuffs such as gels. Also, the vermicelli processing regulation makes pea starch regulatorily exclusive against many other starches in vermicelli industry, while the plant-based trend makes it preferential against animal-based gels such as gelatin. Thus, non-vermicelli markets where pea starch tends to be a gel substitute are strongly suggested for Canadian pea starch's competitiveness shaping, especially where animal gels are the ingredients to be substituted.

4.2.5 Rivalry among Incumbents

The fifth force is the rivalry among incumbents. This section demonstrates the rivalry among existing pea starch companies in China, including Chinese incumbents and non-Chinese/foreign incumbents. High rivalry drives down an industry's profitability, thereby making it harder for Canadian new entrants to compete and poach profits from the Chinese market. Intensity and basis are two metrics to evaluate how well the rivalry can limit the profit potential of an industry.

Intensity

Intensity means how intensive the competition is among incumbents. If incumbents' competition is intensive, the rivalry can greatly ruin profitability.

The intensity of rivalry is high when industry growth is slow because slow growth tends to precipitate fights for market share. In China, the major consumer market for pea starch is

vermicelli industry, followed by bean jelly industry. Demand for pea starch from these industries is relatively stable because vermicelli and bean jelly serve more like a stable food at a national or regional level. With stable demand, pea starch industry grows slowly in China. Therefore, high intensity of rivalry exists in pea starch industry.

Intensity of rivalry is high when exit barriers are high because these barriers likely enforce bad performers to remain in the industry and limit other healthy incumbents. The booming of plant-based trend enforces the extension for pea protein extraction capacity, thereby producing more pea starch. As a result, exit barriers arise because these incumbents choose to hang on and keep producing, even though their starch business earns low or even negative returns. Therefore, the intensity of rivalry among incumbents is high, from this perspective.

Basis

Basis includes what dimensions incumbents compete on, and whether incumbents compete on the same dimensions and the same markets.

If incumbents compete on dimensions other than price, the rivalry is less destructive to profitability. Overall, dimensions where incumbents compete are not limited on price, because except for Price and cost, Chinese buyers have other factors to concern. It is less likely to erode pea starch industry's profitability than it is with pure price competition. However, the price dimension is increasingly highlighted because the ongoing capacity expansion would ruin the pea starch supply-demand balance, then lead to capacity surplus and price cutting. Also, price competition is more likely to occur in vermicelli market, because a lower purchasing price is the key factor to persuade vermicelli participants to switch from one pea starch supplier to another. Therefore, the rivalry among incumbents is moderately destructive to pea starch industry's profitability, but it is increasingly destructive.

If all incumbents compete on the same dimensions to the same consumer markets, the industry is forced to be less profitable, because one company's gain is another's loss. But it helps to increase an industry's average profit potential when each single incumbent focuses on different customer segments. By checking incumbents' company websites, most of them are found to supply only one type of pea starch, which implies that they are unlikely to segment markets or customize pea starch to serve different customer groups. Also, all Chinese incumbents likely have the same focus, on vermicelli and bean jelly markets, because only these two applications are commonly

mentioned in Chinese incumbents' websites. Foreign incumbents, however, mostly cover applications other than vermicelli and bean jelly. Although the Chinese incumbent group and the foreign incumbent group focus on different consumer markets, competition within group still compete on the same consumer markets. In all, the pea starch industry in China, is forced to be less profitable.

Therefore, rivalry among incumbents would greatly drive down pea starch industry's profitability because the intensity of rivalry is high, due to slow industry growth and high exit barriers. It is also because few incumbents segment their markets and there are incumbent cluster focusing the same consumer markets. Although incumbents do not compete purely on price, they would increasingly focus on the price dimension. Thus, one way for Canadian pea starch companies to get rid of incumbents' rivalry is to provide differentiated products. Also, Canadian newcomers are suggested to segment their markets. For example, they can choose to focus on consumer markets where few incumbents focus on, to be exact, markets other than vermicelli and bean jelly. Alternatively, market segment within a consumer market is suggested for Canadian newcomers. For example, these newcomers can segment vermicelli market into high-end segment and low-end segment. And the low-end segment is where they should focus on.

4.3 Research Summary

In summary, threat as a substitute and rivalry among incumbents are two strongest forces that would affect Canadian pea starch to enter and successfully compete in the Chinese market. These are where Canadian new entrants should specifically focus on. However, these two forces have totally converse impacts on Canadian pea starch companies.

As for incumbents' rivalry, Canadian new entrants should acknowledge that the intensive rivalry greatly forces the pea starch industry in China to be less profitable. Focus on price competition is likely the trend, which will ruin the industry's profitability and discourage them to achieve competitiveness. To make it in favor of their competitiveness shaping, Canadian pea starch companies can try to induce more differentiation on their pea starch by launching grower programs to differentiate their raw materials and invest in R&D. Also, segmenting markets helps to ease the rivalry and enhance profit potential of the industry. For example, they can choose to sell their products to markets other than vermicelli and bean jelly. Or they can rather segment market within

vermicelli industry, such as low-end market, and this indeed the segment where few incumbents exist, as discussed earlier.

As for pea starch's threat as a substitute, this is the positive force that Canadian new entrants should make the best of. Pea starch is regulatorily exclusive in vermicelli industry and successfully substituted its only competitor, mung bean starch. Pea starch is a threatening substitute for animal-based gels, such as gelatin, in candy industry, because it is highly cost-effective in relative to gelatin and the plant-based trend drives it highly preferential. Thus, substituting animal-based gels is really a good opportunity for Canadian newcomers to gain competitiveness. The cost-effectiveness relative to plant-based gels also makes it in favor of pea starch in substitution, where some opportunities are there for newcomers. However, the substitution of other most commonly used starches in non-vermicelli industry makes little sense, due to the relatively high purchasing price of pea starch and its unsure cost-performance trade-off.

The key point for the threat as a new entrant is, the entry of Canadian pea starch would impose more threats to non-vermicelli markets than to vermicelli market because entry barriers are lower in non-vermicelli markets and little retaliation is expected there. With demand-side benefits of scale and less pressures from capital requirements in the non-vermicelli markets, Canadian new entrants conversely build up entry barriers for incumbents, although possible barriers derived from customer switching costs may make these newcomers disadvantageous. Also, incumbents are expected to retaliate in vermicelli market, while this is unlikely to happen in non-vermicelli markets because most incumbents are rather new there. Thus, non-vermicelli markets sound like the better choice for Canadian new entrants to shape a competitive position.

One take-away from the power of buyers is, vermicelli processors appear to be more powerful than other food producers mainly because the former is more price sensitive and because their switching costs in changing suppliers are lower. Also, non-vermicelli food producers will be less powerful, as the customer base for this non-vermicelli group likely increase steadily. Thus, non-vermicelli markets sound like a better choice for Canadian newcomers to gain competitive advantage.

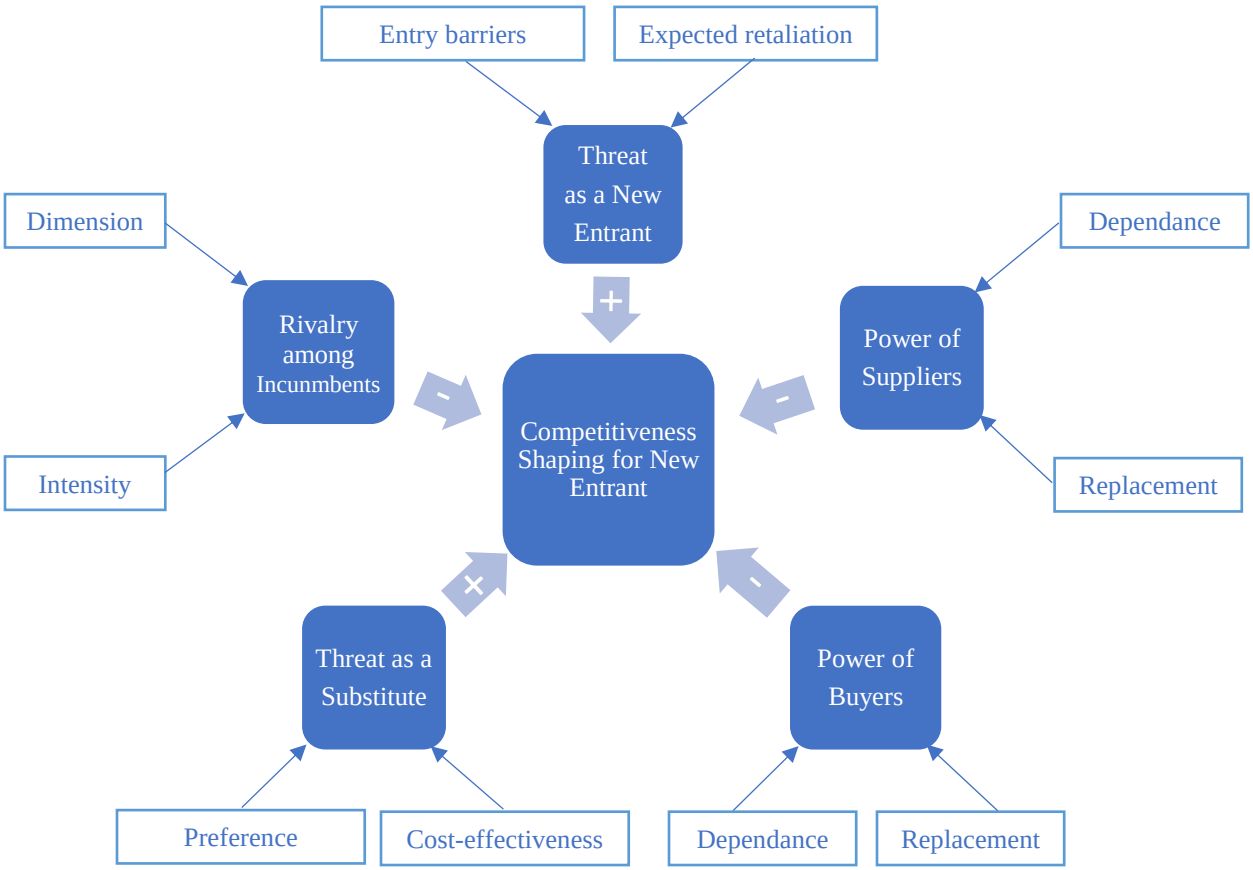
The power of supplier pillar is the last force to watch. Their raw material suppliers are rather powerless, but Canadian pea starch companies are still suggested to engage more in the cooperation with these suppliers, by involving in seed breeding stage or by serving as the seed provider. The highlight is that their third-party transportation suppliers tend to be powerful.

Canadian new entrants are suggested to mitigate risk of seasonal transportation interruption in Western Canada by establishing a Chinese branch or by finding a Chinese distributor.

Chapter 5 Discussion

Based on Porter's (2008) five competitive forces model and data analysis in previous sections, a theoretical framework is created for competitive forces analysis of a new entrant (also as a substitute), and helps the new entrant to strategically shape its competitive position in a market/industry. Figure 2 shows the competitive forces framework for new entrants.

Figure 4 Competitive Forces Framework for New Entrant



(Modified and enriched based on the Five Competitive Forces Model of Porter (2008))

Market potential of a new entrant (also as a substitute) in a market/industry should be analyzed and competitive strategies should be suggested based on the understanding of industry competition structure facing the new entrant. All five forces, namely the threat as a new entrant,

the power of suppliers, the power of buyers, the threat as a substitute, and the rivalry among incumbents should be considered, rather than purely dig into any of them. The five forces can either positively or negatively shape competition structure in favor of new entrants to successfully enter a market and gain their competitive position. Each force has two metrics that can be used to evaluate the strength of the force. The strongest force(s) influence industry competition most forcefully and require more attention.

Threat as a New Entrant is a positive force to shape the competition structure advantageous for new entrants' competitive position. Entry barriers and Expected retaliation are two factors to evaluate how threatening newcomers are. The higher the entry barriers, the more difficult for newcomers to enter and compete in a market/industry. High entry barriers indicate high threats facing newcomers when entering a market/industry, then low threats would converse to incumbents. Thus, if the threat as a new entrant is low, the scenario is not in favor of the new entrant to gain its competitiveness. If new entrants strongly believe incumbents may retaliate, they are less likely to enter a market, because the market environment sounds like unfriendly for newcomers to compete, which means low threats from newcomers to incumbents. Again, low threat as a new entrant indicates that the newcomer is less likely to gain competitive position in a market. Therefore, the higher the threat as a new entrant, the more likely the new entrant is in favor of to establish competitiveness in a market.

Power of Suppliers can negatively affect a new entrant's industry competition by squeezing profits from the new entrant's industry. The supplier group may involve a wide range of suppliers. Dependance and replacement are two dimensions to evaluate how powerful the supplier group is. If the supplier group depends heavily on customers to gain profits, or if customers are independent on the supplier group due to low switching penalty, it is unlikely that this supplier group can squeeze profits from customers' industry at well. Here, suppliers appear to be powerless. In this case, customers find it easier to gain profits and shape competitive position in their own industry. If suppliers provide differentiated products that are unlikely to be replaced, or if suppliers tend to replace customers and compete in customers' industry, these suppliers appear to be powerful and tend to seize a lot of profits out from customers. This makes it tougher for customers to earn profits and gain competitive advantages. Therefore, the more powerful suppliers are, the less likely new entrants (as customers) can successfully compete in the industry.

Power of Buyers has a negative impact on competition structure of new entrant's industry by poaching profits out of that industry. Similar to the Power of Supplier pillar, dependance and replacement are two metrics to evaluate how powerful buyers are. If buyers are large-volume purchasers or there are few buyers, or if buyers can switch suppliers without costs, suppliers tend to be dependent on buyers, or conversely, buyers are likely not that dependent on suppliers. In either case, buyers possess the power to squeeze some profits from their suppliers. As a result, these buyers would find it hard to compete for profits and gain competitive advantages in their own industry. Buyers are less powerful when products that suppliers provide are differentiated. If buyers can easily find an alternative to replace products provided by suppliers, or if buyers tend to replace their suppliers and produce the products themselves, these buyers are powerful enough to enforce their suppliers to give up some profits. As a result, it makes it harder for participants in suppliers' industry to earn money and become competitive. Therefore, the more powerful buyers are, the more disadvantageous for new entrants (as suppliers) to shape competitive position in newcomers' industry.

Threat as a Substitute is a positive force for competition structure and helps new entrants to achieve competitive performance. Preference and cost-effectiveness are two factors that affect how threatening a new entrant is to products to be substituted. The threat of a newcomer to substitute others is rather high, when the prosperity of an industry makes the newcomer preferential, or when regulations enforce the newcomer to be exclusive. Also, the threat as a substitute is high if this substitute has an attractive cost-effectiveness. In all cases, the newcomer tends to make the substitution happen. Therefore, high threat implies high competitiveness of the newcomer in the market, because successfully substituting others indicates a newcomer is competitive than products being substituted.

Rivalry among Incumbents can negatively influence industry competition facing new entrants by driving down an industry's profitability. Intensity and basis are two metrics to evaluate how well the rivalry can limit the profit potential of an industry. Intensity means how intensive the competition is among incumbents. The intensity of rivalry is high, when industry growth is slow, or when exit barriers are high. In either case, incumbents' industry is not that profitable, thereby tougher for newcomers to compete and gain strengths. Basis includes what dimensions incumbents compete on, and whether incumbents compete on the same dimensions and the same markets. If incumbents tend to compete on the price dimension, or if all incumbents compete on the same

dimensions to the same consumer markets, the industry is forced to be less profitable because the rivalry is relatively high. As a result, newcomers would feel more stressful to successfully compete in the industry. Therefore, the higher the rivalry among incumbents, the less likely the competition structure can benefit new entrants to achieve competitiveness.

This theoretical framework can not only apply to similar cases where companies serve as a new entrant as well as a substitute. It can also be further modified to apply to a scenario where a new entrant who is not expected as a substitute for other products. In this case, the “Threat as a substitute” force would be modified to be “Threat from substitutes” and it would become a force with negative attribute. While for companies who are incumbents rather new entrants, all five forces would just go back to Porter's (2008) model, but the positive/negative attribute and evaluation metrics built up in this thesis can be added in with adjustments if needed.

Chapter 6 Conclusions

6.1 Summary

This thesis constructs a competitive forces framework for a new entrant to comprehensively analyze competition structure in a market/industry from five forces (namely Threat as a New Entrant, Power of Suppliers, Power of Buyers, Threat as a Substitute, and Rivalry among Incumbents). It helps to determine market potential and enlightens the new entrant to strategically shape its competitive position in the market. The theoretical framework is created based on Porter's (2008) Five Competitive Forces model and based on the analysis of the case of Canadian pea starch in the Chinese market. In this thesis, Porter's (2008) model is first preliminarily modified to fit into competitive forces analysis from the new entrant's perspective. Then, semi-structured interviews are carried out with Chinese food producers and Canadian pea starch companies to collect data for later competitive analysis on Canadian pea starch. Multiple-phase interviews are carried out among Chinese participants. Phase 1 aims to understand reasons for Canadian pea starch's non-widespread use in China and reasons for Canadian pea starch being refused by Chinese buyers. Phase-2 conversations are processed among accepters to further investigate factors that Chinese buyers concern about. Then interviews with Canadian participants are conducted, followed by matching the eligibility of Canadian pea starch suppliers to meet Chinese buyers' demands. Afterwards, with data collected above, the previously modified model is adopted to analyze how five competitive forces affect Canadian pea starch's industry competition structure, and thereby strategically suggesting Canadian new entrant (also as a substitute) how to gain competitiveness in the Chinese market. Finally, the previously modified model is enriched by illustrating the positive/negative attribute of each force and adding metrics used to evaluate each force. Findings of the case analysis show that Canadian pea starch is not widely used in China, probably due to the lack of introduction, the excellent performance of existent raw materials, the poor performance of pea starch, and negative political factors. Canadian pea starch is refused by Chinese buyers mainly for five reasons, namely inability to compete, unnecessary substitution, conservative buyers, equipment requirements, and diet tradition. Chinese food producers' major concerns about Canadian pea starch are product quality and performance, price and cost, food safety, supply capacity and stability, services, brand, success stories, and supply chain, where the former two dominate their concerns. Canadian pea starch suppliers are

found to completely mismatch buyers' expectation on Supply chain and partly mismatch buyers' demand in Services. And there are some unknows and mismatches on Canadian suppliers' ability to satisfy their buyers' need on both Product quality and performance, and Price and cost. As for Canadian pea starch's competitive position, the rivalry among incumbents is the strongest negative force where more attention is required. Also, Canadian pea starch companies are highly suggested to make the best of their threats as a substitute to gain competitiveness in the Chinese market.

6.2 Contributions

The academic contribution of this thesis is the theoretical framework to analyze the industry competition facing a new entrant from an overall structure, and thereby providing strategies for the new entrant to gain competitiveness. This theoretical framework is modified based on Porter's (2008) Five Forces model to suit competitive forces analysis from the standpoint of a new entrant (also as a substitute). This is the first academic study to analyze the market potential of pea starch based on qualitative customer analysis and supplier eligibility. This is the first competitive forces analysis that specifically examines Canadian pea starch.

As for practical insights, it sheds some lights on Canadian pea processing industry by providing knowledge about pea starch industry, analyzing competition structure faced by Canadian pea starch in the Chinese market, figuring out its market potential, and suggesting strategies for Canadian pea starch companies to shape a competitive position in the Chinese market. It also contributes to Pulse Canada's "25 by 25" strategy and Canada's Protein Industries Supercluster.

The case analysis section is a good material for Canadian pea starch companies to decide their business strategies. For example, a company may decide whether to enter the Chinese market, or rather devote to the North American market and focus on R&D to extend pea starch end uses. Also, knowing that most non-vermicelli Chinese buyers concern about Convenience and Supply chain, Canadian pea starch companies may choose to build up a Chinese location serving as a warehouse, to eliminate Chinese buyers' convenience concerns and supply chain concerns, by enabling easy access to their products and services and by mitigating adverse impacts resulted from seasonal transportation interruption in Western Canada.

6.3 Limitations

This thesis has some limitations. The first limitation is that the sampling does not cover all applications (consumer markets) of pea starch and rather reginal. One reason for this can be the researcher's limited access. Thus, more consumer markets should be covered and Chinese food processors in other regions should also be added in future research to further enrich the framework and enhance its generation. Another possible reason is the low market potential of some consumer industries. This indeed induces a direction for future research. For example, future research can examine both the "Why is Canadian pea starch not widely used in China?" section and the "Why do some Chinese food producers refuse to try Canadian pea starch?" section in this thesis, and find out specific reasons for each consumer industry, then make comparations. Given that the theoretical framework is grounded based on analysis of the case of Canadian pea starch, further examination on the applicability to other commodities to other markets is required.

Another limitation is the infeasibility of doing any sample tests during the data collection stage. As a result, Product quality and performance of Canadian pea starch in the Chinese market is unknown. For this issue, the researcher tries to make a preliminary judgement on the likely eligibility of Canadian pea starch based on suppliers' previous performance, but only limited to companies who have Chinese buyers. Therefore, the confirmation of Canadian pea starch's Product quality and performance would be a gap waiting for future research to fill.

6.4 Future Research and Recommendations

Future research can be quantitative analysis examining to what degree each force can influence industry competition and then contribute to competitiveness shaping. For example, whether all five forces can equally drive up/down the ease to gain competitiveness, or the weights of their effectiveness are different. Similar effectiveness analysis can dig into the "evaluation metrics - five forces" side, i.e., to what degree can each individual metric make a difference to the related forces. Also, future research may want to understand the counteraction between different forces or different evaluation metrics. For example, how a negative force can offset a positive force, thereby enforcing competition, and making it harder to gain competitiveness.

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Appendix A

Question List (Chinese food processor -Vermicelli)

(Phase 1)

1. What is the origin of your pea starch? (Where is your pea starch processed?)
2. How do you feel about the pea starch being used?
3. Have you ever heard about or tried Canadian pea starch? (i.e. pea starch processed in Canada)
   (If yes, how do you feel about the Canadian pea starch?)
4. Are you interested in Canadian pea starch?
   (If no, why do you refuse to try Canadian pea starch? - Then go to ***Q5***.)
   (If yes, then go to ***Phase 2***.)
5. Do you know that pea starch can also be used in pet food, livestock feed, extruded snack, gummy, jelly, meat product, etc.?
6. Would you like to recommend someone else from your industry or those above to participate in this research?
   (***End***.)

(Phase 2)

7. What do you do in your company? How long have you been here? Can you talk a little bit about your company?
8. Can you talk a little bit about the application of pea starch in Chinese vermicelli industry?
9. If you decide to try Canadian pea starch, what factors do you care about?
10. How about … (other possible factors that are not mentioned)? Any other factors you would like to add?
11. Do you have a preference on domestic product or imported product?
12. What is your impression on Canada? Dose this impression make a difference to your preference to Canadian pea starch or pea starch originated from other countries?
13. Why do you think Canadian pea starch is not widely used in Chinese market?
14. Do you have any suggestions to enhance the competitiveness of Canadian pea starch in Chinese market?
15. Do you know that pea starch can also be used in pet food, livestock feed, extruded snack, gummy, jelly, meat product, etc.?
16. Would you like to recommend someone else from your industry or those above to participate in this research?
    (***End***.)

Appendix B

Question List (Chinese food processor – Non-vermicelli)

(Phase 1)

1. What types of starch/gel are you using? How do you feel about them?
2. Do you know that pea starch can be used in your products?
3. Have you ever tried pea starch or heard someone in your industry are using pea starch? (If yes, how do you/they feel about the pea starch?)
4. Based on the benefits of pea starch, are you interested in pea starch?
   (If no, why do you refuse to try pea starch? - Then go to ***Q5.***)
   (If yes, then go to ***Phase 2***.)
5. Do you know that pea starch can also be used in Chinese vermicelli, pet food, livestock feed, extruded snack, gummy, jelly, meat product, etc.?
6. Would you like to recommend someone else from your industry or those above to participate in this research?
   (***End.***)

(Phase 2)

7. What do you do in your company? How long have you been here? Can you talk a little bit about your company?
8. Can you talk a little bit about the application of starches/gels in your industry in China?
9. If you decide to try pea starch, what factors do you care about?
10. How about … (other possible factors that are not mentioned)?
11. If it is Canadian pea starch, what factors would be your concern?
12. Do you have a preference on domestic product or imported product?
13. What is your impression on Canada? Does this impression make a difference to your preference to Canadian pea starch or pea starch originated from other countries?
14. Why do you think pea starch is not widely used in your industry in China?
15. Assuming that pea starch is widely used in your industry, do you think Canadian pea starch will be competitive in China, compared with other pea starch?
16. Do you have any suggestions to enhance the competitiveness of Canadian pea starch in Chinese market?
17. Do you know that pea starch can also be used in Chinese vermicelli, pet food, livestock feed, extruded snack, gummy, jelly, meat product, etc.?
18. Would you like to recommend someone else from your industry or those above to participate in this research?
    (***End***.)

Appendix C

Question List (Canadian pea starch processor)

1. What do you do in your company? How long have you been here? Can you talk a little bit about your company?
2. Can you talk a little bit about the pea starch industry? How about Canadian pea starch?

3. Have you sold pea starch to China? How do your Chinese customers feel about your pea starch?
4. In which target industries, the reconstruction of production line/machine is required if pea starch is used?

5. What is the price of your pea starch?

6. Normally, how do you show food safety of your pea starch to customers?

7. What is your annual production capacity of pea starch?
8. If a Chinese vermicelli company's demand for pea starch is almost 2000 tons/year, is it a challenge for you to constantly supply them with that much pea starch?
9. Are you available to supply pea starch all year around?
10. How do you maintain the product quality of your pea starch?

11. Do you have any branches /distributors in China?
    (If no, are you interested in setting up a branch/finding a distributor in China?)
12. Normally, how long does it take to transport pea starch to China? How about in winter?
13. Are there any impacts of the seasonal transportation interruption in Western Canada on pea starch transportation?
14. Are there any other logistics problems on pea starch exported to China?

15. Are there any political restrictions/supports on Canadian pea starch exported to China?

16. Whether your pea starch is allowed by Chinese food industry?
17. Do you have any idea whether pea starch is allowed by target industries in China?
18. Are you qualified to export pea starch to China?
19. Whether your branch/distributor in China is qualified to sell pea starch in China?

20. Does your company offer any types of product support?
21. Three types of product support are expected by most Chinese food producers: a) a formulation for reference; b) demonstration of product production with pea starch added; c) follow-up support for customized adjustments.

Do you offer those services?

22. Do you offer free sample?
    (If no, how will you set the sample price?)
23. In what application, do you have success cases?

24. Any other factors do your previous Chinese customers care about?

25. Do you think Canadian pea starch is not widely used in China? What is your thought on that?
26. According to Chinese food producers whom I reached out to, Canadian pea starch is not widely used in Chinese market. Why do you think this non-widely use?

Appendix D

Informed Consent Form for Interviews

Research Project Title: The Market Potential of Canadian Pea Starch in China-A Qualitative Study of Chinese Buyers' Perceptions

Principal Investigator and contact information: **Shuona Weng (student);** E-mail: **wengs1@myumanitoba.ca**
Advisor and contact information: **Dr Barry E. Prentice (advisor);** E-mail: **Barry.Prentice@umanitoba.ca**

This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

You are cordially invited to participate the research on pea starch. The purpose of this research is to explore the current status of pea starch industry, find out factors that impede Canadian pea starch being competitive in Asian markets from both perspectives of existing and potential application, and identify appropriate solutions to enhance its competitiveness.

The expected benefits associated with your participation are knowledge about barriers of pea starch competitiveness, better understanding of what Asian consumers need and potential business opportunities in Asian markets. One potential risk is the breach of confidentiality, which will be reduced by using coded information, and separating code from code key in different locked files. Another potential risk needed to be informed is that participation of the research may involve some transportation costs and result in loss of wages.

One-on-one interview will be conducted in this qualitative research. Participants involved in the research are experts in pea processing industry and Asian pea starch consumers in processing industry. The researcher will do audio recording and take notes during the interview. The interview is expected to be one-phase and will last for one hour, while you may be invited to participate a follow-up interview if the research requires.

The consent process will be administered by personnel that is not an investigator of this study, in the absence of the investigators. Your responses will be confidential. And only the researcher and advisor have access to the data.

A brief summary of research results will be sent to you via email within one month after data collection is completed, which is expected to be June 18th, 2020. Do not hesitate to tell me if you have any specific preference on how (e.g. by mail) and when you would like to receive the feedback of the research results. Research results will be disseminated to participants and research publication.
All confidential data will be destroyed in five years after the research outputs have been confirmed, which is scheduled to take place in December 2025.

Please be aware that participation is voluntary and there will be no adverse consequences to you and your businesses as a result of your participation.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time before the data analysis phrase of the study, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

The University of Manitoba may look at your research records to see that the research is being done in a safe and proper way.

This research has been approved by the Psychology/Sociology Research Ethics Board. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Coordinator at 204-474-7122 or humanethics@umanitoba.ca. A copy of this consent form has been given to you to keep for your records and reference.

I (Participant) consent to audio recording during the interview. **[Tick required]**

☐ Yes ☐ No

Participant's Signature _____ Date _____

Researcher and/or Delegate's Signature _____ Date _____