



trafoon

Traditional Food Network to improve the transfer of knowledge for innovation



Project no.: 613912

Project acronym: TRAFOON

Project title: Traditional Food Network to improve the transfer of knowledge for innovation

Instrument:

FP7-KBBE COORDINATION AND SUPPORT ACTION

(SUPPORTING ACTION)

Activity 2.2: Fork to Farm: Food (including seafood), health and well being

Topic KBBE.2013.2.3-02: Network for the transfer of knowledge on traditional foods to SMEs

Deliverable Report

China Market Study

Actual submission date: October 2016

Start date of project: November 1st 2013

Duration: 3 years

Organisation name of lead contractor for this deliverable: SPI (Partner 22)

Project co-funded by the European Commission within the Seventh Framework Programme (2007-2013)		
Dissemination Level		
PU	Public	x
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

1. Statement

Deliverable completed

2. Use and Verification of Deliverable in TRAFOON

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1. Introduction

Trafoon is a European Commission (EC) project aiming to support SMEs in traditional food sectors by establishing a knowledge transfer network with a focus on food products made of grains, fish, fruits, vegetables and mushrooms to support traditional food producing SMEs.

As a result of the increasing competition and consumer demand for standardised and price competitive food products, SMEs are looking for new skills to produce traditional food and to promote the aspects of their products related to nutrition and health. Traditional foods have been developed over a long period of time, and some foods have been considered healthy diet while others may not meet nutritional needs nowadays. As a result, these traditional foods may need to change their ingredients in order to adapt to the modern food trend.

To support traditional food producing SMEs, the Trafoon project set sail in November 2013 to establish a knowledge transfer network with a focus on food products made of grains, fish, fruits, vegetables and mushrooms. The current report consists of an overview of the China food market with a focus on trade, market trends, market potential barriers, opportunities, and key market stakeholders.

2. Trade Overview

In China, food sales have been growing steadily. In 2014, the food industry revenues amounted to ¥12 trillion. Given the country population of 1.3 billion, coupled with an increasing demand for quicker, safer and healthier food, revenues relative to China's food industry are expected to continue growing in the next decade.¹

China has become the major driver of EU's agricultural exports. According to the Agri-food trade statistical factsheet from the EU, the EU agricultural food exports, accounting for 7% of the total exports, reached €129 billion in 2015. Overall, the leading EU export food categories are: wine and liquor (16%), wheat (5%) and infant food, milk and flour (5%). China corresponds to the second largest food export market for the EU, representing 8% of all the EU food exports. The growth rate of EU food exports to China increased 39% in 2015, surpassing the growth rate of EU food exports to the US².

China's excess demand for agricultural imports has been channelled into a few commodities that reflect rising consumer demand for vegetable oils, livestock products, and industrial raw materials. The most significant fraction of the EU agri-food exports to China consist in exports of: infant food and cereals, flour, starch or milk preparations (13%); raw hides, skins and fur skins (11%); offal, animal fats and other meats (10%); pork meat (9%); and wine, vermouth, cider and vinegar (8%). On the other hand, EU agri-food imports from China in 2015 primarily consist of imports of: vegetables (11%); offal, animal fats and other meats (9%); preparations of vegetables, fruit and nuts (9%); and tropical fruit, nuts and spices (8%) (Figure 1).

¹ China - Peoples Republic of Food Processing Ingredients China's Food Processing Annual Report

² <http://www.mofcom.gov.cn/article/tongjiziliao/fuwzn/feihuiyuan/201607/20160701361070.shtml>

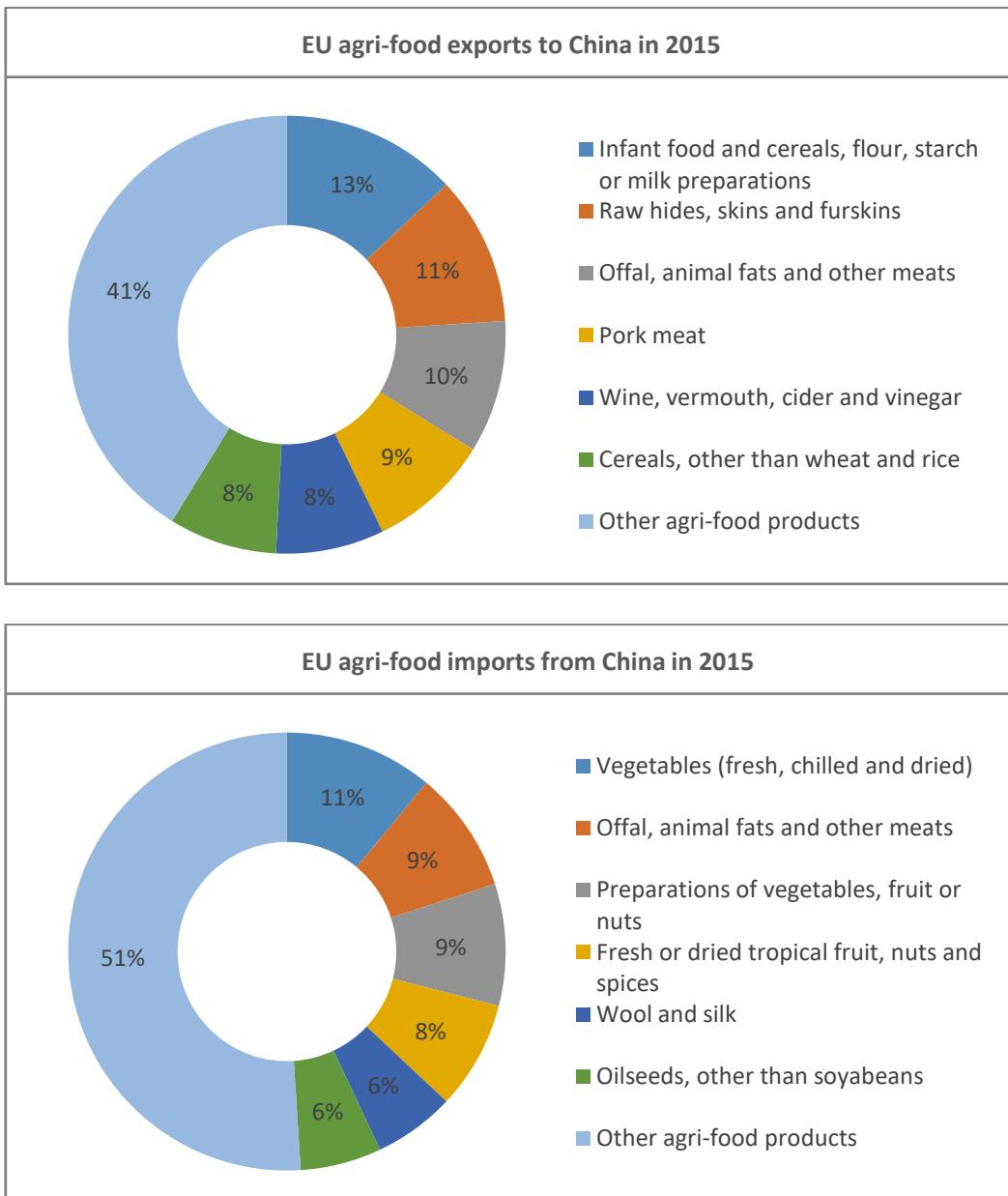


Figure 1 – EU agro-food exports to China and EU agro-food imports from China in 2015

A growing percentage of cash spent in food consumption by Chinese consumers, especially in urban areas, is dedicated to imported products and products with imported ingredients. Table 1 indicates the leading food categories amongst all food imports to China.

Table 1 – China food imports categorised by harmonised system (HS) sections³

HS Section	Imports 2013 (\$100 million)	Imports 2014 (\$100 million)
Oil Seeds and Oleaginous Fruits; Miscellaneous Grains, Seeds and Fruits; Industrial or Medicinal Plants; Straw and Fodder	426.27	458.88
Fish and Other Aquatic Products	59.94	65.83
Dairy Produce, Bird's Eggs, Natural Honey, Edible Products of Animal Origin	52.45	64.91
Cereals	50.54	61.75
Meat and Edible Meat Offal	59.30	58.44
Edible Fruits and Nuts, Peel of Citrus Fruit or Melons	41.01	51.45
Beverages, Spirits and Vinegar	30.58	31.59
Preparations of Cereals, Flour, Starch or Milk, Pastry – Cooks' Products	25.84	28.14
Edible Vegetables and Certain Roots and Tubers	25.49	25.80
Sugar and Sugar Confectionary	23.64	17.86
Products of the Milling Industry, Malt, Starches, Inulin, Wheat Gluten	8.02	9.64
Preparations of Vegetables, Fruit, Nuts or Other parts of Plants	6.62	7.66
Preparations of Meat, or Fish, and other Aquatic Products	1.97	2.49

³ <http://www.stats.gov.cn/tjsj/ndsj/2015/indexeh.htm>

3. Product Market Review

3.1 Foods Made from Freshwater Fish

3.1.1 Import/export Trends 2013-15

In 2012, China became the world's largest seafood market and has overtaken the United States and the European Union.⁴ Between 2013 and 2015, China imports of seafood products has increased from 4.17 million tons to 4.28 million tons (from \$8.6 billion to \$9.1 billion)⁵ representing year-on-year growth (YoY) of 2.65% and 6.34%.⁶ However, the global seafood products have been declining in 2015 due to economic downturn. The import of seafood products was 4.08 million tons representing \$8.9 billion, a decrease from 4.66% to 2.22%.

The export of seafood products was 2.79 million tons representing \$14.9 billion in 2015, falling year on year 1.71% and 7.07%. The main reason underlying the decrease of exports was the cost of the labour force, price increase of raw material and exchange rate.⁷

Chinese consumption of fresh fish and seafood has been increasing in volume sales since 2008, reaching 36.6 million tons in 2013. The table below presents the top ten Chinese fish and seafood imports in 2013.

Table 2 - Top Ten Chinese fish and seafood imports from the World in 2013⁸

Rank	Top Imports	Import Value (US\$)
1	Flours and meals of fish, used in animal feeding	1,671,557,608
2	Frozen Alaska pollock	883,640,971
3	Frozen Fish	465,453,556
4	Frozen, dried, salted, brined cuttlefish and squid	445,921,196
5	Frozen cod	434,003,483
6	Live, chilled, dried, salted rock lobster, other sea crawfish	381,435,828
7	Frozen Pacific salmon	380,934,072
8	Live, fresh, chilled crab	331,726,010

⁴ Rabobank, *The Dragon's Changing Appetite*

⁵ http://www.moa.gov.cn/ztzl/nybrl/rlyx/201402/t20140211_3755451.htm

⁶ http://www.moa.gov.cn/ztzl/nybrl/rlyx/201502/t20150213_4408806.htm

⁷ http://www.moa.gov.cn/ztzl/nybrl/rlyx/201604/t20160412_5090837.htm

⁸ Global Trade Atlas, 2014.

Rank	Top Imports	Import Value (US\$)
9	Frozen flat fish, excluding fillet, livers and roe	231,307,732
10	Frozen shrimp and prawns	198,963,141

In recent years, the exports of seafood products have been growing steadily, especially fresh or chilled fish, frozen fish, dried, salted and smoked fish. In 2013, the export of chilled and frozen fish reached 1.74 million tons, representing \$6.67 billion. The export of fresh fish reached 210 thousand tons, representing \$ 1.5 billion. The export of frozen fresh fish reached 153 thousand tons, with sales of \$178 million. The export of dried, salted and smoked fish reached 194 thousand tons, with sales of \$213 million.⁹

The EU is the largest importer of seafood products, accounting for 24% of total global imports. The EU import of fishery products was valued at €1,610 million in 2015. The EU exported 1.9 million tons of fisheries and aquaculture products in 2012. EU export of fishery products was valued at €422 million in 2015.¹⁰ The EU is a major market for the consumption of seafood products, with 12.3 million tons consumed in 2011, worth a total of €52.2 billion. Fish consumption amounted to 23.81 kg per capita in 2012.

3.1.2 Market Potential Barriers and Opportunities

China's seafood industry is experiencing some main challenges. In the feed industry, intensive culture systems have become a common method compared to extensive culture systems. In intensive culture, the fish are totally feed by artificial compound feed that increase the operating expense accounting for 50% or more of the total operation costs. Apart from the higher expense of feed, food safety is still the main concerned of the feed industry. Chemicals and antibiotics have been found throughout the whole supply chain, including breeding, feed, and transportation of live fish. To deal with the serious food safety issue, the Chinese government has been developing the training of farmers and testing and monitoring food safety control.

In addition, the Chinese government announced a Food Safety Law in 2015 which implements new requirements that obligate importers to review relevant documents provided by their foreign suppliers (exporters and producers). If the imported food products fall in the seven categories that must have on-site inspection, the importers are required to conduct on-site inspection of the exporters and producers

⁹ <http://policy.mofcom.gov.cn/export/seafood/c1.action>

¹⁰ European Union, Trade with China, European Commission

too. The review and inspection records shall be kept properly; otherwise, importers will be punished. The rule also provides the “Guidance for Food Safety Risk Control and Protection Plan of Food Exports to China (Trial)” and the “Catalogue of Products that Must Have On-site Inspection”. The Catalogue contains seven product categories. In the categories below, fresh and frozen seafood is one of the products that must have on-site inspection.¹¹

- Infant formula products
- Food for special medical uses
- Health food
- Meat
- Fresh and frozen seafood for direct consumption
- Rice
- Bulk vegetable oil

Considering the opportunities for the EU seafood exports, the demand for processed and frozen products has gradually improved. Currently, Chinese consumers like to buy live or fresh seafood products. However, with the changing lifestyles and growing income, there is an ongoing trend that people want to have more processed, but healthy and easy to cook food in the future.¹²

3.1.3 Market Trends

In China, people are likely to choose a wide range of fish, including yellow croakers, ribbonfish, carp, catfish, turbot and shell fish. People believe fish are more nutritious than meat, reaching annual consumption of fish products around 14 kilograms per capita in 2014. For example, Chinese people prefer to buy live fish when consuming freshwater fish. As for shellfish, they are simply steamed or boiled before being consumed. Although the consumption of processed seafood is relatively low in China, the seafood market trend has been transforming to the frozen and processed products, which seem to be more convenient ways to serve the food.¹³

In terms of freshwater fish, the main species in freshwater culture are common carp, bighead carp, silver carp, grass carp, Tilapia, Chinese mitten crab, eel, river crab and shrimp. Most farms of fresh water culture are of small scale and distributed in a wide geographical range, which makes freshwater products to be primarily available in local markets. Also, in recent years, with the decrease of caught fish outputs and the increase in fish prices, the outputs of some freshwater fish, such as catfish and tilapia,

¹¹ www.aqsiq.gov.cn/gzcypt/cazxyj/20150908_5/wyyj/

¹² An overview of China's aquaculture, Spring 2010

¹³ http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Food%20Processing%20Ingredients_Beijing%20ATO_China%20-%20Peoples%20Republic%20of_9-4-2015.pdf

have been growing rapidly to meet the demand of the international fish market. There were 369 new types of processed fish products launched between 2011 and 2014 in the Chinese market.¹⁴

China will account for 38% of global fish consumption by 2030. China is increasing its investment in aquaculture in order to meet these demands. In addition, seafood demand from China has grown substantially, and its influence on the global fish markets and trade has intensified over the years. China's per capita fish consumption grew to 33.1 kilograms per year in 2010, reaching an annual growth rate of 6% between 1990 and 2010 and is expected to increase to 35.9 kilograms per year by 2020. With the growing middle class and young population, these consumers will look to purchase imported seafood products because they are seen as high quality and as coming from a clean environment. In addition, rising incomes are creating demand for premium seafood products, both domestic and imported, which will provide a new opportunity for exporters of premium seafood. Some product specific Chinese seafood consumption trends include¹⁵:

- Freshwater cultured products, such as carp, shrimp and prawns, are popular for at-home consumption as they are affordable;
- Processed shellfish/shrimp/prawns and tilapia fillets are increasingly popular among city consumers with busy lifestyles;
- High-value imported seafood, such as lobster, geoducks, salmon, and crab, is widely used by hotels and restaurants for high-end consumers.

¹⁴ Mintel Global New Products Database (GNPD)

¹⁵ Inside China The Fish and Seafood Trade, MARKET ACCESS SECRETARIAT Global Analysis Report

3.1.4 Sample Key Market Stakeholders

Supplier Name	Supplier Profile	Key Capacity
China National Fisheries Corp¹⁶	China National Fisheries Corporation is a transnational enterprise specializing in ocean fisheries business, setting fishing and processing and sales of sea products as core operations, the company also involves in operations such as labour services export of relevant industries and product trade. The Company possesses the largest international fishing fleet in China, The working regions cover Atlantic ocean, India ocean, Pacific ocean and Antarctic ocean. The Company is equipped with international-standard aquatic product processing apparatus and has established sea product sales network worldwide.	The company has set up several advanced and modern sea product processing establishments both in china and other countries, taking up a total area of over 40,000 square meters with annual machining capacity of over 30,000 ton. The products of these factories fully meet the sanitary standards of European Union and U.S.A.
Shanghai Fisheries General Corporation(Group) (SFGCG)¹⁷	SFGCG is a state-owned group corporation. The predecessor of Shanghai Fisheries General Corporation (Group) (SFGCG) was Shanghai Fisheries Bureau, from which was changed to enterprise group in 1992 in the whole organizational system. SFGCG is fully held by Shanghai State-owned Assets Supervision and Administration Committee. Its total assets are 5 billion RMB and its annual comprehensive sales are 7 billion RMB.	SFGCG is utilizing international fisheries resources with deep-sea fishing and aquatic products trade and finely processing as core industry, consisting of over 30 wholly funded, holding or joint venture companies.
Zhanjiang Guolian Aquatic Products Co., Ltd¹⁸.	Guolian Aquatic Products Co., Ltd. was established in 2001, and now it has developed as a company with a completed supply chain which contains seedling, breeding, feed, processing, trading and R&D. The products of shrimps and tilapia are sold in all over the world, among them, the company are making about over	Guolian Aquatic Products Co., Ltd. was the first one who were use and promote '2211 auto management system' and certified HACCP, BRC, BAP international quality

¹⁶ <http://www.cnfc.com.cn/>

¹⁷ <http://www.sfgc.com.cn/>

¹⁸ <http://www.gl-fish.com/en/index.aspx>

Supplier Name	Supplier Profile	Key Capacity
	100 million dollar by exporting White shrimps to the America, and the amount of exporting shrimps of Guolian is about 40% of total value of whole China.	management system. In addition, Guolian Aquatic Products Co., Ltd is also the only company which has zero tariff of exporting shrimps to the America, and the first and only company which allowed to supply fresh shrimps to Hong Kong in the mainland of China.
Zhejiang Ocean Family Co., Ltd ¹⁹	Zhejiang Ocean Family Co., Ltd., located by the beautiful West Lake in Hangzhou, is invested and held by the well-known Wanxiang group. The company focuses its business on ocean fisheries, seafood processing and the import & export trade and domestic trade. Ocean Family has gradually formed the business mode which is “managing professionally, operating internationally, combining fishing, processing and trading and connecting upstream and downstream of business”. In 2015, the total sales revenue reaches 2.052 billion RMB and the foreign exchange earning hits 197 million US Dollars, and the company’s overall economic efficiency leads the industry in the country.	The company’s strategic is to create and breed the company brand, to lead the consumption upgrading and to spread the diet concept of “green, natural, healthy and nutritious” and finally realize the added-value of products and stable development of the company, Ocean Family has invested five big-scale aquatic processing bases and relevant cold storage and logistic systems.

¹⁹ <http://www.zheyu.cn/index.html>

3.2 Traditional Foods Made of Grains

3.2.1 Import/export Trends 2013-15

China is the largest grain producer in the world with a series of incentives that have increased the interest of farmers, resulting in increased grain production. The main products include rice, corn, wheat, and soybean. Grain imports and exports mainly aim to adjust grain surplus and shortage as well as balancing the category of grain products for a balanced supply and demand.²⁰

China has become a consistent grain importer. The agricultural imports reflect its relative scarcity of land resources, and its most prominent imports are oilseeds, oils, and cotton—products that have high land requirements per unit of output. China's import of grain reached 19.51 million tons with a total amount of \$6.2 billion in 2014. Between 2013 and 2015, China's grain import has doubled from 14.58 million tons to 32 million tons, representing an increase of 54% (\$5.1 billion to \$9.4 billion).²¹

In terms of export, China grain exports reached 710 thousand tons, representing \$555 million in 2014. Between 2013 and 2015, China grain exports decreased from 950 thousand tons to 530 thousand tons (\$664 million to \$440 million²²).

In comparison, the EU exported 2.6 million tons and imported 870 thousand tons of grain from 2014 to 2015. From 2013 to 2014, the EU exported 1.6 million tons and imported 1.1 thousand tons of grain. The total grain production reached 325 million tons in 2014; while in 2015 the total grain production decreased 8% reaching 298 million tons. Based on the statistics, the 2014/15 market year was marked by very good harvests, meaning that further stocks could be accumulated despite a high level of exports.²³

Chinese authorities place a high priority on self-sufficiency in grain, which is reflected in policies encouraging domestic production and limiting imports. Despite China's low per-capita endowment of cropland, it remained a net exporter of cereal grains—mainly corn—from the late 1990s until 2007.

3.2.2 Market Potential Barriers and Opportunities

²⁰ <http://www.chinagrain.gov.cn/>

²¹ <http://www.askci.com/news/chanye/2016/02/02/16410b74r.shtml>

²² <http://www.askci.com/news/chanye/2016/02/02/16410b74r.shtml>

²³ The EU Grain Market at the Beginning of Marketing Year 2015/16, ADM Germany GmbH

China is now the world's largest global food market. China grains production has reached 557 million tons compared to the world grain production of 2.5 billion tons in 2014.²⁴ Despite being the world's largest rice producer, China also became the world's No. 1 rice importer in 2013, buying 3.4 million tons of the grain from overseas. Currently, China is now a net importer of rice and wheat, but China is still struggling to meet its domestic grain demand due to the rapid urbanization, growing middle class, increasing incomes and changing of dietary patterns. The supply of basic food, such as grain, is expected to be insufficient by 2050.²⁵

The rise of Chinese imports may contribute to global agricultural output growth and bring more opportunities for the international exports. In addition, China's demand for feed grains has reached a turning point as a tightening labour supply and rising feed costs force significant structural change in China's livestock sector. Rising feed demand has pushed up costs and motivated feed mills, forcing the China government to announce a new strategic approach to food security. The strategy will maintain self-sufficiency, but it allows for "appropriate imports" and focuses concern on food grains (rice and wheat).

China's demand for organic grain might be an opportunity, especially rice and grain may find niche markets in China. For instance, there remains strong demand for fragrant long-grain rice, black rice, and quinoa. Also, processed rice, such as GABA, could be of interest to many Chinese consumers.²⁶ On the other hand, the demand for organic food products is leading to a new class of hi-tech urban farmers and online food merchants.

3.2.3 Market Trends

Chinese consumption of grain per capita was around 140 kg in 2014. Chinese grain consumption has increased from about 316 million tons in 1990 to 545 million tons in 2012.²⁷ The consumption trend is positive in recent years. This indicates that the grain market maintains a high demand. The grain imports are still modest in comparison with oilseed imports. China has also changed from net exporter to net importer of corn and is importing large volumes of distillers' dried grains.

Chinese consumers are more concerned with food safety and would like to choose healthy and natural food. Although most people learn about health food from media advertisements in television, radio,

²⁴ China Year Book 2015

²⁵ <http://www.futuredirections.org.au/publication/china-s-increasing-food-imports-the-impact-on-global-markets/>

²⁶ <http://legacy.intracen.org/publications/Free-publications/Organic-food-products-in-China-market-overview.pdf>

²⁷ China Year Book 2015

newspapers, magazines and the internet, food labels are still considered the most useful source of health and nutrition information for better educated consumers.

Chinese consumers are interested in buying natural foods and ingredients, which is becoming a trend that empowers innovation in Better-for-you (BFY) food and beverages. There are more and more packaging tagged with the wording “no food additives,” “no preservatives,” “organic,” “green,” “0 cholesterol,” and “whole-grain”. In this regard, whole grain has become the more popular food in China since it has many functions that may help the human body to enhance immunity and resist aging. Many consumers carefully check nutrition labels on packages to find signs to convince them to buy whole grain products.²⁸

In terms of the Chinese bakery market, China's annual output of bread was about 3 million tons and annual per capita consumption of bread was about 2.2 kg in 2012.²⁹ It is expected that China's bakery market will reach \$47 bn by 2018.³⁰ In order to meet the healthy trend, the bakery industry has been focusing on promoting more natural grain processing to make the bread, pastry and cakes contain more natural ingredients, including low-sugar, low-fat, low-calorie, raw materials, natural and non-polluting. On the other hand, foreign bakery products have been growing in China. For example, Japan, South Korea, Singapore and other countries open bakeries often. They bring new products and advanced business models, and have gradually become a new bright spot in the China bakery industry.

²⁸ Food Processing Ingredients, China's Food Processing Annual Report, USDA

²⁹ Zhou Guangjun, Current Situation & Trend of China Bakery Industry, China Association of Bakery & Confectionery Industry

³⁰ <http://www.bakeryandsnacks.com/Markets/China-bakery-market-growth-It-s-about-treats-Canadean-finds>

3.2.4 Sample Key Market Stakeholders

Supplier Name	Supplier Profile	Key Capacity
COFCO³¹	COFCO, Chinese state-owned grains trader, Cofco's ambitious plans will put it in competition with foreign suppliers that dominate global flows of agricultural commodities such as US-based Archer Daniels Midland and Cargill. COFCO Corporation is a leading supplier of agri-products, diversified foodstuffs and services in China, integrating agri-trading, logistics, processing, production and sale links, and providing grain and oil products to one quarter of global population. With its international strategic layout, COFCO creates a wholly-new business model to build a fully-integrated value chain covering all links from the farmland to the dining table, thereby developing into an international food company with global layout and staple food operation.	Relying on its global network and domestic storage and logistics presence, COFCO makes grain production and circulation more efficient. Currently, COFCO boasts the asset of \$71.9 billion, storage capability of 31 million tons, annual processing capability of 89.5 million tons, and annual port transit capability of 54 million tons, and annual business volume of 150 million tons. COFCO presents itself in more than 140 countries and regions with 336 branches and offices all over the world.
Beidahuang³²	State-owned Beidahuang manages over 2 million ha of farmland in the province of Heilongjiang. In Argentina, it is pursuing a partnership with Cresud, the country's largest farming company, to acquire farmland. A US\$1.4 million deal it signed with the governor of Río Negro province to secure a supply of soybeans, maize and other crops for 20 years from farms covering 320,000 ha was suspended by court order.	Beidahuang is awaiting approval for a project to develop 200,000 ha of rice, maize, and other crops in the Philippines and is reported to have made offers on a number of farms in Western Australia, amounting to about 80,000 ha of land. Heilongjiang Province, meanwhile, has leased 426,667 ha of land in Russia.
Beijing Organic and	Beijing Organic and Beyond Corporation (BOBC) has become an important organic	BOBC is engaged in the cultivation,

³¹ <http://www.cofco.com/cn/index.html>

³² <http://www.chinabdh.com/>

Supplier Name	Supplier Profile	Key Capacity
Beyond Corporation³³	retailer in Beijing through its direct sales activities. The company works with contracted organic farms and distributes high-quality organic products in various Chinese provinces.	production, distribution and home delivery service of organic food. The company has set up organic farms in Beijing, Shandong, Shanxi, Jiangxi, Jiangsu, Heilongjiang and Inner Mongolia for organic vegetables, fruits, grains, Chinese lake crabs and eggs, etc. As of today, it has fulfilled organic food home delivery services to over 200,000 families in 6 metropolitan cities including Beijing, Shanghai, Guangzhou, Shenzhen, Hangzhou, Tianjin.

³³ <http://www.oabc.cc/>

3.3 Traditional Foods Made of Fruits and Olives

3.3.1 Import/export Trends 2013-15

China's imported fruit market has maintained steady growth, both in terms of total import volume as well as import value in the past several years. In 2014, China's import of fruit reached 3.87 million tons representing a total amount of \$5.8 billion, a growth of 22.81% and 14.7% YoY respectively.³⁴ From 2009 to 2014, the imported fruit has grown about 62%. The main China suppliers of fresh fruit are Chile, New Zealand, Peru, South Africa, Australia and Thailand. The United States is also a major supplier of fresh fruit to China with an import value of \$317 million in 2012. The major fruit import products are grapes, oranges, and sweet cherries.³⁵ In 2015, the export of fruit reached 2.89 million tons, decreasing 9.32% YoY, representing \$6.8 billion. The table below presents fresh fruit imports for China.

Table 3: Total fresh fruit imports for China by variety, 2015³⁶

Rank	Top Imports	Import Value (million US\$)
1	Bananas	772.8
2	Cherries	672.5
3	Grapes	586.3
4	Durians	567.9
5	Kiwi	266.6
6	Guavas, Mangoes, Mangosteens	260.2
7	Oranges	165.3
8	Apples	147.7
9	Plums, Prunes, Sloes	105.2
10	Pineapples	96.2

The output value of dried and preserved fruits was ¥122 billion in 2014 with an average annual growth rate of 21.78 % from 2004 to 2014. In addition, the output value of tree nuts was ¥86.4 billion with an annual growth rate of 16.6% from 2004 to 2014.³⁷

According to Ubifrance, the EU exported 21.3 million tons of fruit in 2013, mostly within the European zone (more than 80% in value terms). According to China trade of fresh fruit with the EU in 2015, the EU

³⁴ <http://www.cnagri.com/shipin/aigesidian/20160219/376309.html>

³⁵ <http://www.freshplaza.com/article/114950/China-produces-half-of-worldwide-vegetables-and-30-procent-of-fruit>

³⁶ <http://www.pma.com/~/media/pma-files/research-and-development/exporting-fresh-fruit-and-vegetables-to-china.pdf?la=en>

³⁷ China Sweets Industry magazine 2015.1

exported fruit to China was valued at € 82 million. The EU imported fruit from China was valued at € 617 million.³⁸

3.3.2 Market Potential Barriers and Opportunities

China's domestic fruit production is also growing rapidly. Grapes, cherries, mangoes, watermelon and other seasonal fruits are going on sale in large quantities. Apples are the second most popular fruit consumed in China and consumers are increasingly turning to e-commerce as a source for their fresh fruit demands. Online fruit sales are expected to grow by 300% year over year to meet increased demand, especially for high-end imported fruit.

The processed fruit industry in China has been focusing on the processed technology and high-tech equipment. Over the past decade, the Chinese processed fruit industry has been making an effort to enhance the quality of fruit and increasing logistic storage ability, supporting not only the development of fresh food but also promotion of processed category^{39 40}.

Due to the health and wellness trend, the juice market in China is well established. The juice drink market in China has dominated sales of the fruit/vegetable juice market over the past few years, and is predicted to continue that trend into the future. Juice types in the category have a much higher price threshold and could cater to China's high-income earners with high health-consciousness, as the targets of high concentration juice and imported juice.⁴¹

The market access challenges need to be considered. Based on the regulation from General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China (AQSIQ)⁴², not all fresh fruit products and countries are allowed market access in China. As of February 2016, 39 countries were allowed to export specific categories of fruit to China. Allowed and disallowed product categories are reliant on both technical and political limitations, with quarantine and pest control the major factors influencing technical admittance of imports into China. AQSIQ has established strict inspection regulations to safeguard domestic Chinese produce against possible pest infestation and fruit diseases. AQSIQ procedures can be slow and require large amounts of back and forth on the part of the importer/exporter and the AQSIQ.

³⁸ AGRI-FOOD TRADE STATISTICAL FACTSHEET European Union - China

³⁹ <http://field.10jqka.com.cn/20160630/c591366380.shtml>

⁴⁰ <http://www.ocn.com.cn/chanye/201607/qhov01095504.shtml>

⁴¹ <http://www.agr.gc.ca/eng/industry-markets-and-trade/statistics-and-market-information/agriculture-and-food-market-information-by-region/asia/market-intelligence/fruit-juices-in-china/?id=1414766009816>

⁴² <http://www.aqsiq.gov.cn/>

3.3.3 Market Trends

China's total production of fruit was 26 million tons and the consumption of fruit per capita was around 48 kg in 2014, representing a growth of 1.05%. In the rural area, the consumption of fruit per capita was around 28 kg a 3.32% growth.⁴³ The consumption of imported fruit continues to increase rapidly in large cities mainly affected by the development of e-commerce, which targets the consumers with higher disposable income and young professionals.

Regarding China's direct fresh fruit imports, 70% of the volume is coming from South East Asian countries (the Philippines, Thailand and Vietnam) which primarily supply tropical fruits, such as bananas, dragon fruit and durian. These products are especially popular in southwest China, so many local distributors and buyers have established their own sourcing and packing operations in South East Asia.

Sichuan Province is one of the fruit-growing regions in China, in which citrus, kiwifruit and berries are all grown in significant volumes locally. However, there are still opportunities for imported fruits in that region – kiwifruit, berries and table grapes are among the preferred imported fruit. Moreover, the Pearl River Delta region is considered a trade hub for both imported and domestic tree nuts and dried fruits. Based on the well-developed distribution channels across the country, it has allowed traders, processors and packers to easily access tree nuts and dried fruits both domestically and from abroad.

Fruit gift boxes are basically one of the most common gifts in China, since it is very popular to buy fruit gifts when people meet with friends. The consumption trend for high-end fruit gift boxes has been shrinking significantly in 2013 and 2014, because the strict rules implemented by the Chinese government. As a result, the market trend has been moving toward households with affordable fruit packages. During important festivals, such as Chinese New Year and Mid-Autumn, Chinese people purchase more fruits gifts in these holiday seasons.⁴⁴ Normally, oranges and apples are the traditional fruit gifts of choice in China as well as imported cherries.

Innovation in the Chinese fruit industry is taking place in different forms. Fruit and vegetable industry consists of new fruit and vegetable varieties and different ranges of processed (frozen, canned and dehydrated) products. In terms of distribution channels, online retailers and O2O (online to offline) platforms are booming in China. Chinese consumers have been increasingly turning to online retail and O2O platforms for their food and beverage consumption demands. More specifically, there are a number of online retailers specializing in organic products to meet growing demand for natural and organic products. Online distribution platforms are seen to be particularly promising for organic and

⁴³ <http://www.cnagri.com/shipin/aigesidian/20160219/376309.html>

⁴⁴ China - Peoples Republic of Food Processing Ingredients China's Food Processing Annual Report

specialty foods, as they can reduce the cost and provide more product guarantees.⁴⁵ The competition in the imported fresh fruit e-commerce market in China is fierce and primarily domestic. The most famous online distribution, such as Alibaba Group and JD.com (two largest e-commerce platforms for imported fruit), are specialized fresh produce e-commerce companies.

⁴⁵ <http://www.china-briefing.com/news/2015/06/02/going-organic-investing-in-chinas-growing-health-foods-market.html>

3.3.4 Sample Key Market Stakeholders

Supplier Name	Supplier Profile	Key Capacity
Qixia Defeng Food., Co., Ltd.⁴⁶	Qixia Defeng Food., Co., Ltd. located in Shandong Province. Qixia is known as Top city of fruits in China, with beautiful scenery and comfortable climate. Founded in 2001, Defeng food has 16 fruit processing lines and corresponding ancillary facilities. The cooperation is mainly engaged in storage, processing and exportation of fruits and vegetables. 90% of its products are sold abroad, and clients are from Southeast Asia, Europe and American countries. Annual sales volume of fruits and vegetables are 40,000 tons	The company has two controlled atmosphere stores with 26000 tons of storage capacity.
Junjie Foodstuff Co., Ltd.⁴⁷	Junjie Foodstuff Co., Ltd., established in 2001 with registered capital of \$1.28 million and fixed assets of over RMB 80 million, is a leading multi-industrial enterprise of agriculture, integrating fruit cultivation, purchasing, processing, storage, fresh-keeping and trade. The company has 6 subsidiary companies and economic entities, including Laiyang Jieji Food Co., Ltd., Laiyang Junjie Foodstuff Co., Ltd., Yantai Junjie Foodstuff Co., Ltd., Shanghai Junjie Fruit Supermarket, Guangdong Dongguan Junjie Fruit Distribution Center and Yantai Junjie Fruit Professional Cooperation, etc. The two subsidiaries in Laiyang and Qixia, covering an area of 30,000 sq.m. CA storages with the capacity for 25,000-ton fruit.	The company has capacity to store fruit of the company is up to 30,000 tons, of which the 25,000-ton high-tech atmosphere cold storage adopts European advanced CA refrigeration technology, which can keep the product fresh for up to six months or even one year.
Laiyang Hengrun Foodstuff Co. Ltd⁴⁸	Laiyang Hengrun Foodstuff Co. Ltd is a private joint venture with foreign investor, which was founded in May 1994. By the end of 2013, it owned the total fixed assets of RMB 470,000,000 yuan with employees of 2000. It owns about 60,000 square meters of the high standard and aseptic processing and packing workshop.	The corporation emphasizes on the processing and exporting all kinds of agricultural products of more than 200 products engaged in the fields of frozen

⁴⁶ <http://defeng-food.com/en/about/>

⁴⁷ <http://www.jjfood.cn/>

⁴⁸ <http://www.hengrun.net/index11.asp>

Supplier Name	Supplier Profile	Key Capacity
	<p>It has the capacity of low temperature storage of 15,000 tons, the constant temperature storage of 10,000 tons, the low temperature air conditioned storehouse of 5000 tons. The company is equipped by the imported IQF quick-frozen machine, assembly line system, the automatic sealing machine, the metal detector, the pesticide residues detector. It has the television monitor control system with high standard, products checking center and computer management system.</p>	<p>vegetables, frozen fruits, seasoned foods and low temperature fried foods. It has the annual producing of 20,000 tons. All products are exported to Japan, America, France, England, Australia, Canada, European countries and so on.</p>
Goodfarmer Agricultural International Trade Co., LTD⁴⁹	<p>Ever since founded in 2002, Goodfarmer Agricultural International Trade Co., LTD (hereafter as Goodfarmer) has witnessed a rapid development, which is committed to growing into a global supply-chain manager of high-quality agricultural products. Goodfarmer has registered the Chinese brand domestically and the counterpart English brand 'Goodfarmer' internationally. More than 90% of our exported products are labelled with the own brand. Goodfarmer has three major business fields, which are export, import and domestic distribution of vegetables and fruits.</p>	<p>Goodfarmer has established a comprehensive quality control system to ensure the safety of the products, which carefully selects the origin of a certain product, scrupulously determines relevant variables to be examined, meticulously specifies evaluation standards, accurately records and then vigorously analyses the resulting data, and finally takes scientifically designed corrective measures. This sophisticated system of quality control has secured Goodfarmer the HACCP, GLOBALGAP and BRC certifications.</p>

⁴⁹ <http://www.goodfarmer.com/>

3.4 Traditional Foods Made of Vegetables and Mushrooms

3.4.1 Import/export Trends 2013-15

In 2015, both China's export and import of vegetables have been growing steadily, the import of vegetables reached 240 thousand tons, increasing growth of 10.30% YoY, with the total amount of \$541 million. The export of vegetable was 10 million tons, representing growth of 4.37% YoY, with the total amount of \$13 billion.

Among the export of vegetable products in 2015, the export of frozen vegetables accounted for 6.53 million tons representing \$5.4 billion. The preserved vegetable export was 3.18 million tons with an amount of \$4.5 billion. The dried vegetable export was 460 thousand tons representing \$3.1 billion. It is expected that the trade surplus will keep growing. The import of vegetables from the EU reached 50 thousand tons representing \$87 million in 2015.⁵⁰

Among the import of vegetable products in 2015, half of imported vegetables came from North America, accounting for 130 thousand tons representing \$200 million. The main imported vegetables include preserved vegetables, canned vegetables and frozen vegetables, which are originated in North America and Europe. The import of preserved vegetables accounted for 160 thousand tons with an amount of \$200 million and is mainly from US, Canada, Belgium, Netherlands and Thailand. The import of frozen peas reached 8000 tons with an amount of \$9 million and are mainly from New Zealand, US, Sweden and Poland. Based on the import structure, fresh vegetables can meet the domestic demand, while processed vegetables are becoming the major import products. This is due to China's processing technology lagging behind other developed countries.

EU imports and exports of fresh vegetables have doubled over the last decade but their trade is more or less balanced. In 2015, the EU export of preps. of vegetables, fruits, nuts & plants to China was valued at €96 million, while the export of edible vegetables, roots & tubers was €9 million. In terms of imports from China, the import of edible vegetables, roots & tubers from China was €542 million, and the import of preps. of vegetables, fruits, nuts & plants was €525 million. Vegetables and their preparations accounted for another 20% of EU imports from China in 2013. While imports of fruit and vegetable preparations (e.g. tomato paste) decreased by 15%, imports of fresh and chilled vegetables (e.g. garlic, mushrooms) increased by 4%.⁵¹

⁵⁰ http://www.shac.gov.cn/scig/scfx/jckdt/201607/t20160714_1616960.html

⁵¹ Agricultural trade in 2013: EU gains in commodity exports

3.4.2 Market Potential Barriers and Opportunities

In recent years, policy focus has shifted from boosting exports to supplying domestic markets. When China entered the World Trade Organization (WTO) in 2001, agricultural officials identified vegetables as one of the country's most competitive agricultural subsectors and formulated plans to form "export bases" to boost exports. The Chinese Government has enacted numerous measures to respond to the rapid increase in domestic vegetable prices. Initiatives in place since 2010 aiming at boosting the domestic vegetable production and reducing marketing costs include⁵²:

- A renewed "vegetable basket" supply and marketing system that encourages local authorities to subsidize greenhouses, extension, farmer cooperatives, marketing and processing companies, and market facilities to ensure city food supplies;
- A waiver of value added tax (VAT) for vegetable traders and processors serving the domestic market (since January 2012);
- Elimination of VAT rebates for exports of vegetables (since March 2012);
- Encouraging supermarkets, cafeterias and restaurants to purchase produce directly from farmer cooperatives;
- Reduced electricity and water rates for vegetable distributors, market stalls and storage facilities;
- Setting up local vegetable reserves and compensation systems to curb price fluctuations and help producers cope with market risks;
- Building centres for trading, storing and distributing vegetables in major production regions through a network of "vegetable garden" projects; and
- Close monitoring of supermarket entrance and shelf fees charged to vegetable suppliers.

Foreign food imports have annually increased 15% from 2012 to 2014, and the amount of food imports has more than quadrupled over the last decade. China is expected to become the top importer of foreign food products, with the total value of food imports set to reach \$77 billion by 2018.⁵³

Most food imports are organic food items. Once seen as a luxury food item, imported organic foods are an increasingly accessible option for Chinese consumers. The organic food market in China has tripled since 2007 to currently account for 1.01% of total food consumption, which is still lower than the 5 to 8% of the market in areas like Europe and the US. It is estimated that market value of organic imports are around \$20 million, with consumers typically middle and upper class Chinese with children. In a

⁵² China's Vegetable Exports Peak as Attention Shifts to Domestic Market, USDA, <http://www.ers.usda.gov/media/1225184/vgs353sa3.pdf>

⁵³ <http://www.china-briefing.com/news/2015/06/02/going-organic-investing-in-chinas-growing-health-foods-market.html>

consumer study carried out on 204 Chinese organic consumers in Beijing and Shanghai, 71% were ready to pay a premium of 20 to 50% for organic products.⁵⁴

3.4.3 Market Trends

China is the largest producer of vegetables in the world, accounting for over 50% of the total global production; the agricultural sector comprises approximately 13% of China's total GDP. Grains and vegetables are the most consumed F&B products in China, with Chinese citizens consuming around 80 kg of grains and over 100 kg of fresh vegetables, respectively, per household in 2012. The consumption per capita for vegetable and mushroom is around 104 kg in 2014.

China's export-oriented supply chains are often set up to supply overseas markets and are poorly integrated with domestic markets. Comparing imported and exported vegetables, the main exported vegetables are mainly fresh or frozen vegetables, and the imported vegetables are mainly preserved or dried vegetable, showing that China has a large volume of vegetable production, but the processing technology still lags behind other developed countries. The China government has implemented multiple plans to support the vegetable production base, distribution channels, but has improved the international market competition capability very little.

In terms of mushrooms, traditionally collected from forests are now cultivated have recently become the fifth-largest agricultural sector in China. The total value of mushroom products amounted to 149 billion ¥ Yuan (24 billion) in 2011. Due to the long history of using edible mushrooms, many Chinese believe that some edible mushrooms contain great nutritional value. This may affect a few traditional mushrooms (like white jelly fungus and shiitake) causing very high prices at first, leading many farmers to engage in both wild collection and exploration of new ways to cultivate.⁵⁵

⁵⁴ <http://www.china-briefing.com/news/2015/06/02/going-organic-investing-in-chinas-growing-health-foods-market.html>

⁵⁵ Edible Mushroom Cultivation for Food Security and Rural Development in China: Bio-Innovation, Technological Dissemination and Marketing

3.4.4 Sample Key Market Stakeholders

Supplier Name	Supplier Profile	Key Capacity
Shenzhen Agricultural Products Co., Ltd.⁵⁶	<p>Founded in 1989, Shenzhen Agricultural Products Co., Ltd. is a group company dedicated in the field of agricultural products distribution, focusing its core business on investing and managing food wholesale markets. SZAP owns 38 wholly-owned & holding companies, 24 shareholding companies, 2 branch companies, and total assets of over 16 billion Yuan.</p> <p>The company has created an innovated networking system for food distribution composed of more than 50 integrated food markets and online markets scattered in some 35 large Chinese cities such as Beijing, Shanghai, Shenzhen, Tianjin, Xian, Chengdu, Wuhan, Nanchang, and Changsha, forming the largest platform for agro-products distribution, transaction, logistics, and integrated services in the country. Annual volume of transaction in these wholesale markets reaches 25 million metric tons, and annual turnover over 150 billion Yuan, accounting for nearly 10% of the total annual turnover in all large-scale wholesale markets in the whole nation.</p>	SZAP has initiated and practiced the idea of "Green Transaction", and has developed the brand of HiGreen with core values of food safety, logistics efficiency, and resource recycling. With rich achievements in market design & construction, logistics management, food safety monitoring, IT applications, e-commerce practices, financial services, and environment protection, HiGreen markets have become the benchmark of wholesale market transforming and upgrading in China.
Longda Foodstuffs Co., Ltd⁵⁷	<p>Longda Foodstuffs Co., Ltd exports mostly the processing farm products and it is the provincial key enterprise group and leading enterprise. There are more than 400 products such as fresh fruits & vegetables, frozen vegetable seasoning products, FD (vacuum frozen dryness) products, gain oil products, aquatic product, meat products and flavouring products and so on. The products are being sold to over ten countries, such as Japan, Korea, Singapore, USA, England, Germany, Russia, and so on. It has formed a scale of processing 140,000 tons of</p>	Longda Foodstuffs Co., Lt has 26 joint ventures and Wholly-owned subsidiaries with 20000 staff and workers and a total assets of 2 billion yuan. The management item refer to foodstuff processing, vegetable base plant, seed pig breeding, carpentry processing, packing, business

⁵⁶ <http://www.szap.com/index>

⁵⁷ <http://longda.com.cn/>

Supplier Name	Supplier Profile	Key Capacity
	food annually, 3.0 billion yuan of sales income 160 million US dollars of export and 200 million yuan of profit and taxes annually.	trade
FUJIAN ORIENT FOODS CO., LTD.⁵⁸	Fujian Orientland Foods Co.,Ltd is a modern high-tech enterprise, wholly owned by Orient Foods (HK) & Co in Hong Kong and specializes in deep-processing foods and bio-tech products with the technologies of vacuum freeze drying & cold-air drying etc. The registered capital of our company is 5 million dollars and the total investment is 15 million dollars. It is located in Zhangzhou, Fujian Province, near 208 provincial highway so it has very convenient transportation.	Specializes in deep-processing foods and bio-tech products with the technologies of vacuum freeze drying & cold-air drying etc.
Shandong Chizhong Group Co.,Ltd⁵⁹	Shandong Chizhong Group Co.,Ltd was established in 1993, located in Dongying City, Shandong Province. At present, the group has more than 1,500 employees, a fixed asset of RMB 625 million and a registered capital of RMB 160.8 million.	The group is one of China's leading agricultural enterprises specializing in growing, processing, and marketing vegetables, fruits, and meat foods. It mainly handles the foodstuff items including: Fresh Fruits & Vegetables, Frozen Fruits & Vegetables, AD&FD Vegetables, VF Fruits & Vegetables, Frozen Conditioned Food, and tapioca starch.

⁵⁸ <http://www.orientland.cn/default.aspx>

⁵⁹ <http://www.chizhong.com/en/home.htm>

4. Observations & Conclusions

China has a population of more than 1.3 billion people, making it the world's largest consumer market for F&B, surpassing the United States. By 2018, the Association of Food Industries predicts that China will be the world's largest consumer of imported food. Generally, the key growth driver in the Chinese economy has been the rapid rise in average household incomes. Over the past ten years, China has experienced an average GDP growth of approximately 10%, which has created a new middle-income group with much higher disposable incomes.

Chinese consumers have been increasingly turning to online retail and O2O platforms for their food and beverage consumption demands. As more and more consumers are getting used to buying fresh fruit and vegetable from virtual and physical stores, e-commerce has exerted great influence on the traditional sales channels, but now some consumers are still not confident in online seafood products, especially the frozen ones. This is because China's present cold chain logistics has not been able to meet the requirements of consumers regarding product quality. However, it is expected that processed food products are going to become increasingly popular with China's economic development and the improvement of consumers' living standards.

In the freshwater fish sector, the Chinese seafood industry is still in the process of changing its consumers' consumption habits, improving cold chain logistics and anticipating great market changes. Although Chinese consumers prefer to buy live fish and seafood, frozen seafood and dried seafood are becoming the popular trend due to the changing lifestyles. Instant frozen fish can meet the consumers' demanding busy lives.

In the grain sector, as China maintains higher grain consumption per capita, it has a great demand on importing grains. Whole grain food and organic grain have become the main selling points for Chinese consumers, which means the processed grain market will continue growing with several key points. First, a growing demand on green food and organic food, people are now usually more careful about what they eat. As a result, the products tagged with "low-sugar", "low-fat", "zero-cholesterol" and "organic" gained much more attention from consumers.

In the fruits and vegetable sector, the consumption of imported fresh fruit will keep growing with the increasing numbers of Chinese middle-and upper-income families. Moreover, imported branded fresh produce is also perceived as meeting higher food safety standards and thus demands a premium in the Chinese market. The consumers believe that fresh fruit increases their ability to stay healthy. On the other hand, there are more and more consumers concerned with food safety standards and regulations,

because an increasing number of food scandals have been disclosed. This makes the consumer more aware of food safety in general.

China is not a single market, apart from big cities; there are several second or third tier cities to be explored. Incomes are growing rapidly in second and third-tier cities, creating a new range of opportunities. In addition, the transportation infrastructure and end-to-end cold chain logistics continue to improve in China.