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Tesi di Dottorato in:

"The business opportunities for the fresh-cut industry and post-harvest technologies in China”

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I would like to dedicate this PhD thesis to some really special people in my life:

My mom Pier Paola and my dad Mario, for everything they've done for me.

My wife Adele, for being by my side during the many nights and holidays I spent writing this thesis.

Our baby Andrew Mario Filippo, for giving me a lot of energy and determination to achieve this goal.

Thank you so much to all of you!

Abstract:

China’s slowing GDP and the trade dispute with the United States have injected a cloud of uncertainty into the Chinese economy. Some observers have predicted that these developments will spell bad news for Chinese consumption, which has thus far been a powerhouse for economic growth.

Although traditional drivers of China’s economy—investment, exports, and manufacturing—are struggling, the country’s consumers remain confident.

Consumers in China are proving to be remarkably resilient and remain a powerful, transformative force not just in China but also across the globe. Although it’s likely the growth rate for consumer spending will be slightly lower in the coming years, consumers continue to increase their spending by a considerable margin and are eager to pay for items with a strong value proposition.

These forward-looking remarks open the door to the perspectives of the fresh-cut industry in China and aim to provide some guidance on the business prospects for those companies that want to enter this Asian market.

My PhD dissertation is divided into three chapters, targeting to contribute to the debate on the Ready To Eat (RTE) business and the results that can achieve on the Chinese market.

My contribution to the research begins with an analysis of the traditional food sector in the fruit and vegetables sector. Consumer insights, market perspectives and health benefits of increased vegetable consumption, as well as production and business strategies for SMEs and distributors are the key issues of my analysis.

The second chapter that I propose will be focused on the analysis of the Chinese consumer's purchasing behavior of fresh-cut products, and key findings are the result of a questionnaire given to Chinese consumers of fresh-cut products entitled: "Questionnaire to Chinese consumers: Exploring consumption of Ready to Eat (RTE) Products in China".

The final part of my research, the third chapter, proposes a theme related to the transformation of typical Italian products: concentrated juices. A current topic in China, in light of the

growing interest from the Chinese consumer of healthy food products. In this area my research focuses on the strategic implications and business opportunities for the Italian agri-food chain.

Keywords:
Chinese consumer behavior; fresh-cut produce; food safety; consumers preferences; distribution channels of fresh cut; post-harvest technologies; potentialities of the Chinese market; consumption habits; Chinese consumer profile; willingness to pay; key players in the Chinese market; barriers can affect the development of the market; opportunity for the Italian agri-food supply chain.

Acknowledgements

The following pages are the 'diary' of the journey of these wonderful years. So, I would like to thank those who have supported me to achieve this prestigious goal.

A very deep thanks for this magnificent experience I address to my tutor Antonio Stasi, to which I am grateful for all the professional support and guidance he has provided me.

Immeasurable gratitude to Giancarlo Colelli who introduced me to the world of fresh-cut business. Such was the interest in this topic that I asked him to obtain the PhD at the Agricultural University of Foggia.

Together with Antonio and Giancarlo we have delivered the first chapter of this PhD that during 2019 was published by Elsevier as chapter of the book ‘’Innovation in Traditional Food’’.

Thanks to Antonio Stasi and my colleague Francesca Hansstein of the Xian Jiaotong Liverpool University – Suzhou, China. We worked together successfully to deliver the chapter of this thesis "Fresh-cut an innovative Ready To Eat food products consumption model for the Chinese consumers"" and the questionnaire that is an integral part of it.

Thanks to Antonio Stasi again who gave me contributions, valuable tips and suggestions for realizing the chapter '"The new Chinese consumer - Opportunity for the Italian agri-food chain"'.

Thank you all for these unforgettable years.

Premises

My strong interest in fresh-cut business originated in 2015 when I was working for a global French consulting firm in their Shanghai branch. One of our clients, an industrial park run by the local government of one of the wealthy provinces of eastern China, turned to us to develop a whole area dedicated to the processing of fruit and vegetables.

The executives who managed the company aimed to spread the fresh cut business model in China, decidedly developed in several Western countries, and which, in their opinion, could find a strong interest even among local consumers.

What were the reasons for this choice? New requirements and buying purchasing behaviors of the Chinese consumer were becoming more and more widespread: a growing attention to everything that concerns the issues of quality of life, well-being, and healthier food.

That's when I met Professor Giancarlo Colelli, authoritative and recognized worldwide expert. I asked him to help us to introduce this concept of healthy food in China. Supporting him was a source of inspiration, personal and professional growth for me.

Objectives and explicatory notes to the three chapters of the dissertation

General objectives

The objective of my research is to evaluate the market potential of the fresh cut business model in China. A model that so far has been poorly explored and studied, in terms of academic literature review and business cases analisys. This gives an experimental connotation to my dissertation and takes into account the difficulties in finding relevant data, studies and researches.

There is a segment of the Chinese population, located in specific geographical areas (because of higher income, consumption models more exposed to western models, etc.), who know the product, some tried it, and expressed useful opinions for a first evaluation.

The author targets to analyze the sentiment of this segment of consumers, to create a first mapping and establish the ground for a subsequent more in-depth research on the topic.

Specific objectives of the 3 chapters

Chapter 1: Innovation in traditional food: fruit and vegetables.

This section targets to assess that, although there is a long-term decrease in the consumption of fruits and vegetables, fresh-cut products represent a valid alternative to counteract this negative trend.

The literature analysis and deliverables proposed are a summary of the results obtained in the various surveys and research included in the chapter.

Chapter 2: Fresh-cut an innovative Ready To Eat food products consumption model for the Chinese consumers.

The assignment that the author has developed aims to show that, although the literature on the topic is rather scarce, there are undoubted signs that the Chinese consumer is showing an important attention to everything is related to healthy lifestyle. Fresh cut products find very favorable ground to match with this new life style.

The author has focused the attention on the Chinese consumer behavior on fresh cut produce and proposed a possible business model for companies that want to enter the Chinese market.

Chapter 3: The new Chinese consumer - Opportunity for the Italian agri-food chain.

This section is a work that has informative and not scientific research purposes.

The chapter is a market research that aims to deepen what is known on the Chinese market on concentrated juice products and which are the opportunities for Italian companies targeting to enter in this specific market niche.

A brief description of the methodology applied

In order to achieve the objectives mentioned above, in each of the three chapters a systematic analysis of the available literature has been carried out. The logic is to better comprehend the China universe, the industry trends, the market, the target market, the social factors can influence the consumers behavior and assess what has been developed by the academic literature or evaluate if is necessary to fill in gaps in the literature.

In the sections dedicated to the Chinese consumer behavior analysis (chapters two and three) has been proposed a qualitative interpretation of market data; developed a methodology of consumer survey through a questionnaire and proposed a descriptive analysis of the resulting outcomes. This is in order to assess the potential and the feasibility to introduce a new consumption model in China and to assess the critical success factors for an organization targeting to enter in this market.

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CHAPTER 1

INNOVATION IN TRADITIONAL FOOD

FRUITS AND VEGETABLES

Abstract

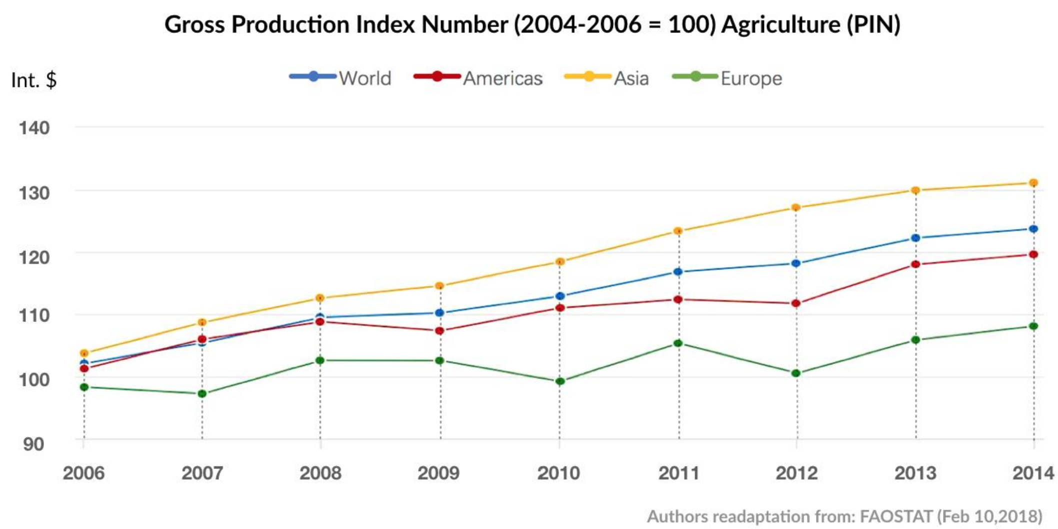
Fruits and vegetables are both food products in their own right and key ingredients in many processed foods. On the other hand, processed fruits play an important role in the healthy eating of consumers. Both of them, as traditional food products, they are an important part of the cultural heritage of the European society as well as in other regions of the world, too. Although there is a long-term decrease in the consumption of fruits and vegetables, fresh-cut products, because of their convenience, represent a valid alternative to counteract this negative trend. In fact, the fresh-cut sector is showing positive figures, and innovation in product quality and safety attributes, which are generally valued by consumers. Nonetheless, how Fruits & Vegetables (F&V) products, geography and market is going to evolve? The chapter discusses these issues thoroughly. In addition, coverage will include consumer insights, market perspectives and health benefits of increased vegetable consumption, as well as production and business strategies for SMEs and distributors.

General trends

Benefits of fruits and vegetables (hereafter F&V) on health are sure and well documented. According to the World Health Organization (WHO), the daily intake of an individual is approximately of about 400 g (WHO, 2008). However, the overall daily consumption of F&V in the western countries decreased more than 10% in the last ten years (Freshfel, 2014).

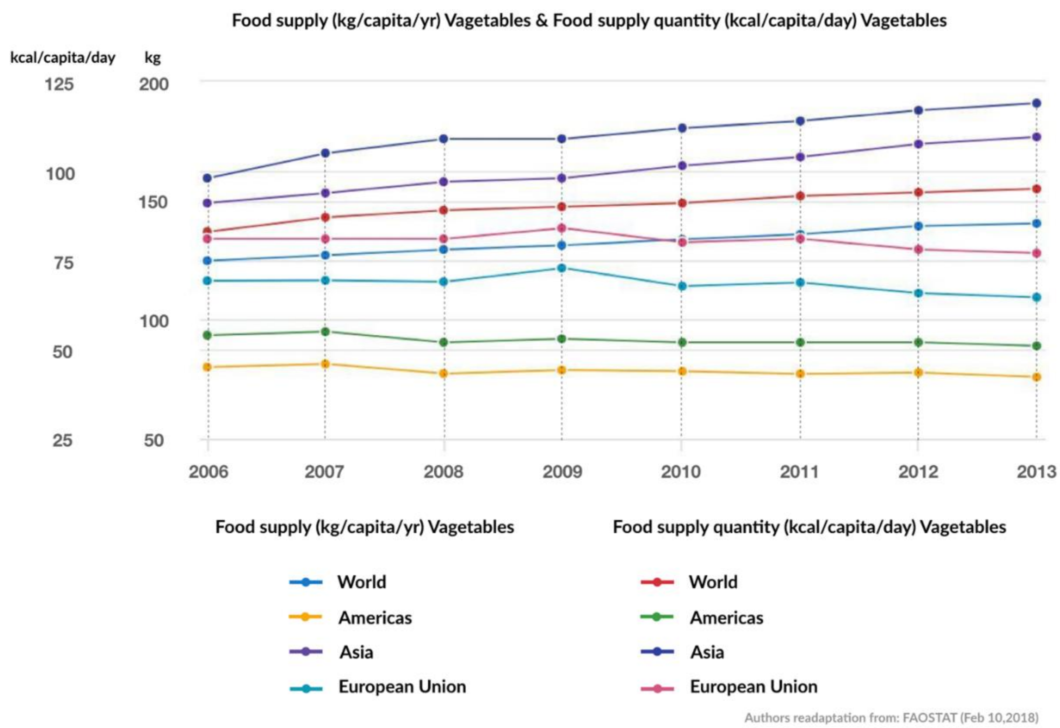
The official statistics provided by FAO show that world agricultural production has progressively increased (Source: FAO Stat data, Gross production Index Number).

Picture 1 - Agricultural Production Indices (FAO Stat data)

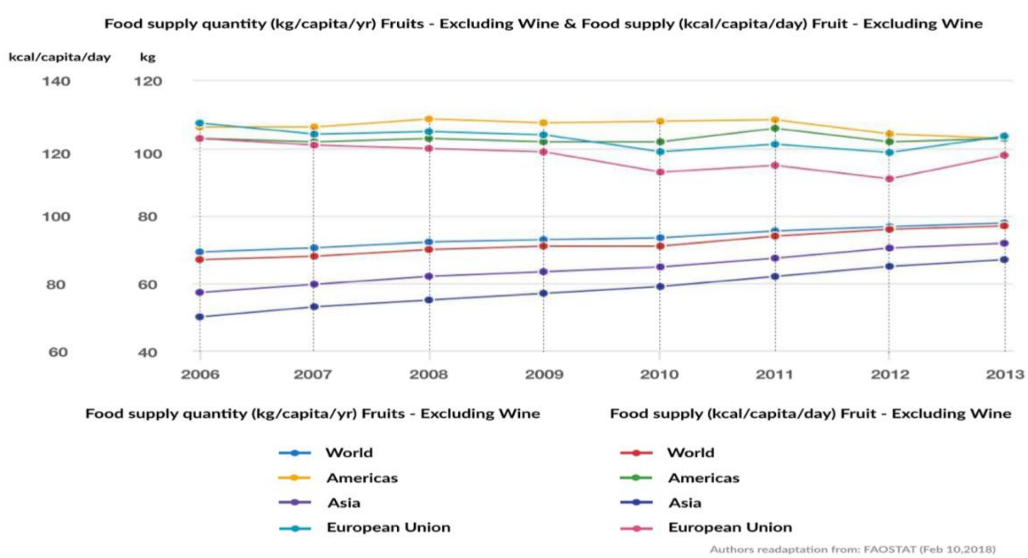


Moreover, FAO statistics also provide a significant analysis of the food balance. Picture 2 and 3 illustrate the breakdown at Global, Americas, Europe and Asia level, with regard to the consumption of vegetables and fruit (kg/capita/year and kcal/capita/day).

Picture 2 – Vegetables Food Balance Time series (FAO Stat data)



Picture 3 – Fruit Food Balance Time series (FAO Stat data)



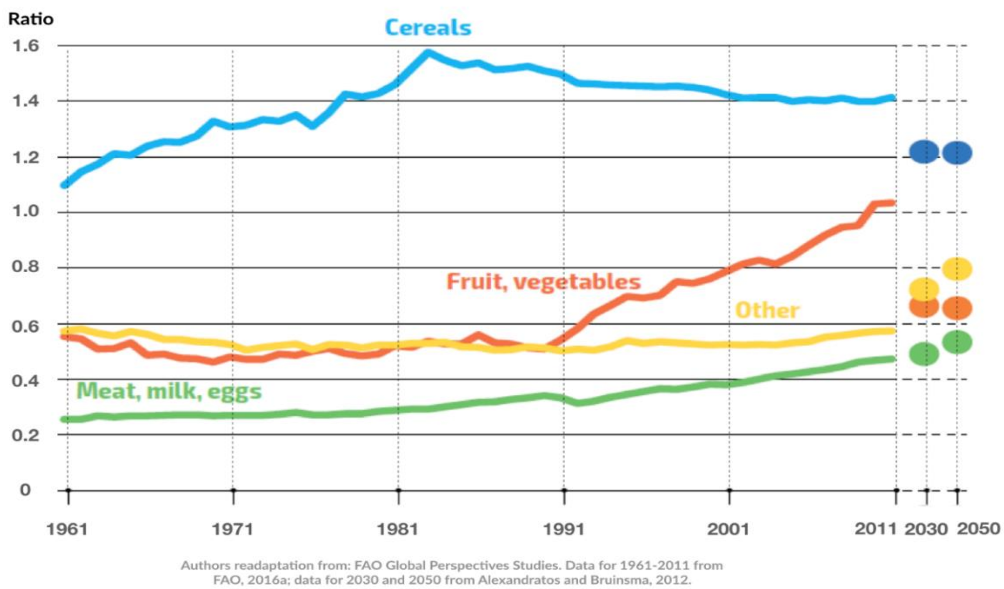
The pictures highlight that, at world level, two main directions exist. While western countries show decreasing consumption of F&V, the rest of the world shows opposite trend. In fact, population growth, increasing trade, nutrition awareness, and migration are all factors having an incidence on those trends (FAO, 2017).

Despite the general level of consumption regarding F&V, when looking at population status, some other evidence of societal emergencies comes to light. Malnutrition comes in a number of forms that not only affects a person's health and well-being, but also places heavy burdens on families, communities and states (FAO and WHO, 2014). Ending hunger, achieving food security and improving nutrition are all key steps toward sustainable development (UN, 2016). Food safety is also a key concern, as unsafe food remains a major cause of disease and death (WHO, 2015). Meanwhile, changes in dietary patterns around the world have consequences for public health and sustainable development. 'Triple burden' of malnutrition remains a global health emergency. The 'triple burden' of malnutrition weighing on most countries consists of under nutrition, micronutrient deficiencies, and overweight and obesity (FAO, 2017).

Between 1990 and 2013, the consumption of more nutritious foods increased worldwide. Trends differ, however, in the types of food consumed and across regions. For example, fruit consumption increased in all regions, but vegetable consumption increased only in some of them (FAO, 2017). Typically, fruit consumption, in terms of grams per person per day, tends to rise with average income levels, whereas vegetable consumption declines (FAO, 2017).

Overall, the average dietary energy supply in low- and middle-income countries remains well below the level of high-income countries, but the gap is closing gradually. In 1961, the DES (Dietary Energy Supply) of low- and middle-income countries was only 68% of these in high-income countries but rose to 81% in 2011. By 2050, it is projected to get at 86%. Across all groups of food items, dietary patterns in the two groups of countries tend to converge – the ratios in Picture 4 are progressively getting closer to one, except for the ratio for fruits and vegetables.

Picture 4 – Per capita caloric intake in low- and middle-income countries compared to high-income countries (FAO, 2017).



However, adequate food availability does not automatically imply proper dietary intake of healthy, nutritious, balanced and safe food. First, inequality in income and other means of subsistence explain large differences in food access and why still hundreds of millions of people are malnourished. Second, poorer households tend to face impediments to the adequate utilization of food owing to lack of access to facilities, such as food storage, cooking equipment and clean water, and to services, such as health care and basic nutrition education. Third, the dietary transition is partially reflected in improved access to more nutritious foods, including meat, dairy products, fruits and vegetables, but not necessary in the right balance (FAO, 2017).

In western countries, the scenario of decreasing consumption of F&V highlights a deep change in consumer profile and habits. In order to increase the daily consumption of F&V, the “high convenience F&V” sector plays an important role due to the convenience and freshness of this minimally processed product. In fact, given the great concern about contemporary dietary habits, where overweight-related health problems associated with high carbohydrate intake are more frequent, governments in several countries have launched informational and educational initiatives aimed at increasing public awareness about the benefits of F&V. While deemed important by several states, the effectiveness of this campaign is debated by several authors (Seiders and Petty, 2004; Gordon et al., 2006; Mazzocchi et al., 2009). The Agriculture Ministry of the European Commission (EU) approved in 2008 the introduction of an EU School Fruit Scheme (SFS), in order to support the consumption of fresh F&V among children in school. Different authors have evaluated the efficiency of the SFS in recent years: Wingensiefen et al. (2012) found a positive impact of SFS on children's F&V intake in North Rhine-Westphalia, the largest federal state in Germany. Von Germeten and Hirsch, in 2015, analysed the effect of preparation on children's acceptance of fresh F&V, finding that convenience itself does not increase F&V acceptance.

Evolving consumer preferences towards F&V

In Western countries, consumers have a marked attention to agro-food products that can guarantee attributes such as: quality, safety, nutritional factors, freshness, richness of assortment, etc (Artés et al., 2009; Watada et al., 1999; Soliva-Fortuny et al., 2002; Rico et al., 2007). Medium-high income consumer target, which refers to high educated people (hereafter middle-class), as reference of such a change, is interested in purchasing products with a higher level of service and quality. The segment of the products of the fresh-cut sector is certainly the one that can mostly match to these needs.

At this purpose, public and private research has identified that F&V consumer groups are more and more informed, constantly seeking an answer to a growing and noticeable need. The profile of the consumer particularly attracted by this type of products is in fact:

- Aware of purchasing choices;

- Looking for a balanced diet;
- Paying attention to sustainability issues;
- Definitely sensitive to her/his own health;
- Looking for products with a high level of service;
- Purchase, on regular basis, fresh produce mostly from a strictly controlled supply chain.

The authors have carefully monitored the reason that leads the consumer target to orientate the purchasing choices towards this type of product. The literature review points out that the factors to be taken into account are in particular (Pilone et al., 2017; Baselice et al., 2017; Santeramo et al., 2017; Pollard et al., 2002; Baselice et al., 2014).

- Food Imbalances;
- Eating Disorders;
- Diet Problems;
- Food intolerances;
- Scarce Quality;
- Scarce Service level;
- Preventive action against many diseases;
- Scarce time at disposal for food preparation.

These needs and wants are associated with a particular attention to those products that come directly from the producer (the farmers), i.e. products that have a short supply chain, in order to allow a direct presence of the products on the shelves of the distribution channels (i.e. supermarkets, hypermarkets, grocery stores, etc.) (Pilone et al., 2017; Baselice et al., 2017; Santeramo et al., 2017; Pollard et al., 2002; Baselice et al., 2014).

Important elements that need to be distinguished for further analysis can also be drawn from the food technology literature, the economic literature for fresh F&V, and consumer studies on other convenience products.

On the one hand, technological research on fresh-cut F&V quality improvements, from safety and packaging standpoints, is constantly evolving and it highlights the growing interest towards food safety characteristics and quality preservation techniques (Watada et al., 1999; Soliva-Fortuny et al., 2002; Rico et al., 2007; Artés et al., 2009; Amodio et al., 2011). On the other hand, the study of consumer acceptability and preferences towards those innovative attributes does not find much interest among scholars.

Literature on F&V consumers' preferences, not fresh-cut, presents some interesting analyses. Pollard et al. (2002) provides a review offering a rigorous investigation of factors that affect consumer choices and intake of F&V. They show that sensorial appeal, social interactions, costs, time constraints, personal ideology and advertising are all factors capable of influencing the choice of F&V. Other authors (Loureiro et al., 2001; Harker et al., 2003; Campbell et al., 2004; Haghiri et al., 2009) focused instead on assessing consumers' preferences for specific products (e.g., apple, mandarin) or for targeted categories (e.g., organic, imported, local).

Other useful interpretations come from studies of consumers' attitudes towards convenience food and ready to eat products. Marshall et al. (1994), and Cassady et al. (2007) found an inverse relationship between convenience food consumption and income, implying budget availability to be a barrier. Moreover, Scholderer et al., (2005) showed that number of children, full-time employment and disposable income are all variables directly connected to the perception of spare time, and hence to convenience food attitude. Further barriers, such as social environment, time pressure, consumption of food in restaurants, or take-away have been found in studies by Frewer et al. (2001) and Buckley et al. (2007). De Boer et al., (2004) analysed Irish convenience food consumers, comparing regression results for four convenience food categories: ready meals, take-away meals, restaurant meals, and pub meals. They found high consumption of convenience food to be positively related to lifestyle variables (social events, eating alone, breakdown of mealtimes, novelty) and time pressure, but negatively related to cooking skills and relevance of freshness for food choice.

In addition to convenience, preferences towards ready to eat products are strongly related to food safety perception and packaging characteristics. Delizia et al. (2003) found that labeling and product information on nutritional facts, safety and descriptions of technology appear to be important attributes in convenience food choice. Cardello et al. (2007) found "innovative technologies" to be associated to unknown heath risk, while the term "cold preservation" yields a positive utility. Conversely, the attribute "minimally processed" yields a negative utility, which may imply that products that have not been processed sufficiently are perceived as a source of microbiological or other safety risks. The type of packaging also seems to influence consumers' choices. In this regard Peters-Texeira and Neela (2005) found that convenience food features have different impacts on consumers' choice. More specifically, the most important variable is label information, followed by packaging quality, brand and the visual impact of the product.

Specific literature on fresh-cut F&V consumers' preferences, in fact, generally does not show different results, although Jaeger and Rose (2008), through a stated choice experiment, analysed the attributes during "eating occasions" with regard to fresh fruit choices. They found that the eating occasions in which fresh-cut fruit is preferred to other food are: while driving and while eating in public space. Specifically, fresh-cut fruit is preferred to fresh fruit when it is eaten slowly, and time is taken to linger over the food. They also found that fresh-cut fruit is less likely to be chosen than fresh fruit, independently from the price, although Marshall et al., (1994) and Cassady et al. (2007) showed an inverse proportionality with income. Secondly, their research revealed that the date of packaging and the country of origin are the main attributes influencing consumers' choice. Similar results were found by Owen et al. (2002), who reported that the choice of fresh fruit and vegetables is often not influenced by the price of an individual item. Brunner et al. (2010) found that naturalness and nutrition knowledge, age and price are negatively related to convenience salad consumption, while a woman's task is positively related. A more specific study has been conducted by Ragaert et al. (2004). They analysed the perception of minimally processed vegetables and packaged fruit, finding that search attributes such as product appearance and packaging are significantly more important in the buying stage, while experience attributes (taste, odor, texture) are more important in the consumption phase. Therefore, consumers of ready to use products do not look just at the quality, but search for a reasonable compromise between quality and convenience. Liking/preference of F&V is crucial in determining choice and intake (Von Germenten and Hirsch, 2015; Baxter & Thompson, 2002; Howard et al., 2012). More specifically, Von Germenten and Hirsch (2015) found that plastic packaging, pre-slicing and pre-portioning, being connected to the perception of safety, impact children's F&V liking, confirming the strong relation between sensorial characteristics, food safety perception and choice (Birch, 1999; Tohill et al., 2004). Interestingly, Laureati et al. (2014) and Mustonen et al. (2009) show that familiarity with the product is connected to the perception of safety, and thus, to its choice. Literature reports other important attributes in the choice of fresh-cut F&V, such as variety and assortment (Just et al., 2012; Krølner et al. 2009), and packaging material (Koutsimanis et al., 2012).

The increasing development of minimally processed and packaged vegetables can be considered as a real market opportunity for producers. In fact, investing in this sector is seen as a possible strategy of diversification and value enhancement of products (Casati, 2010; Baldi, 2007; Avermaete et al., 2004). Retail industry, historically suffering in the department of F&V, is also showing high interest towards fresh-cut assortment because it allows developing differentiation strategies, and to increase the turnover of the whole category (Sodano and Hingley, 2007).

This framework is determining an increasing attention of the economic literature focusing on consumers' preferences analysis, and more specifically on the impact of quality attributes on price. While preferences towards fresh vegetables have been widely studied (Pearson et al., 2009; Alaimo et al., 2008; Cassady et al., 2007; Pollard et al., 2002; Cox et al., 1996; Brug et al., 1995; Marshall et al., 1994), papers concerning minimally processed and packaged vegetables are still rather limited (Nassivera and Sillani, 2015; Stranieri and Baldi, 2015;

Baselice et al., 2017; Vidal et al., 2013; Ragaert et al., 2002, 2004; Viaene et al., 2000; Baselice et al., 2017; Pilone, Stasi, Baselice, 2017). Moreover, ready-to-eat products literature, on the other hand, provides numerous contributions, although not always specific, about consumer preferences for fresh-cut vegetables (De Boer et al., 2004; Geeroms et al., 2008; Brunner et al., 2010; Hartmann et al., 2013; Van der Horst et al., 2011). In addition, none of those contributes is based on revealed preferences through real market data.

Market outlook

Trends in the European market

In Europe, fresh-cut fruits and vegetables supply is one of the emerging industries in the agro-food sector. During the last years, this production has been characterized by an interesting progressive increase in trade that has been similar across all western countries (Pilone, Stasi and Baselice, 2017). The demand for these products has risen thanks to consumers recognizing fresh-cut produce as an ideal solution that satisfies modern food needs, such as, wide-ranging of high-quality food, time saving, food safety assurance, and the consumption of fresh food products (Baldi and Casati, 2009; Rocha and Morais, 2007; Buckley et al., 2007; Caccetta and Platania, 2006; Henson and Jaffee, 2006; Scholderer and Grunert, 2005; Ragaert et al., 2004; Bacarella, 2001, 2002; Grunert et al., 2001).

According to researches (Rabobank, 2010) the F&V market is the fastest growing but smallest and most promising segment of the F&V market in the European Union. Fresh-cut F&V products are on average higher value-added products than whole fresh or processed F&V. It was expected that during the global economic downturn, consumers would trade out to cheaper whole fresh and processed F&V. Despite these forecast the EU fresh-cut F&V segment has weathered the storm well. European companies surviving the recession, in fact, they have shown specific strategies addressed to the exploitation of the new fresh-cut seeking markets. Those marketing strategies can be summarized in brief:

a. The foreground analysis. Conducting a watchful market research to understand key trends in emerging consumer models in the fresh-cut business and the fresh food industry (personalized nutrition, healthy diet orientation, safety awareness, environmental concern, changing eating habits) (Baselice et al, 2017);
b. Matching Strengths to Opportunities/Converting Weaknesses and Threats. Carry on with a SWOT analysis in order to understand the internal strengths and weaknesses of the company and to seize opportunities and diminish the potential risks of the market (niche market exploitation, new certifications, innovative technologies, reduction environmental impact, cost minimizing strategies, optimized logistics and shelf-life, integrated supply-chain and contracts with distributors);
c. The Segmentation Targeting Positioning (STP) marketing strategy:
    - Segmentation. Understand how the global demand for F&V produce is structured;
    - Targeting. Identifying the most suitable target audience to whom propose the fresh-cut mix produces;
    - Positioning. Occupy a ‘’position in the consumer's mind’’ (Ries, Trout 2010) as a product can satisfy specific needs and wants, with a significant competitive advantage over competitors (traditional products and fresh-cut differentiation and consumption innovation);
d. The 4 Ps of the marketing mix:
    - Product. A fresh-cut product offer in order to match with differentiated needs and wants of the consumers (varieties, packaging size, shelf-life (Pilone et al., 2017));

- Price. The right price positioning to emphasize the ‘’value-for-money’’ concept with a superior service/value added factor that the fresh-cut produce can offer compared to other products;
- Place. Working with the GD/DO buyers to increase the rotation of the fresh-cut products on the shelves, keep a tight control over the entire cold chain and preserve the shelf-life are some of the key issues should be considered;
- Promotion. Identify forms of communication that increase the consumers attention (healthy diets, safety, nutrition, time-saving, dynamic, value for money).

In addition to the marketing strategies, supply chain strategies are also fundamental for the success and competiveness. Forms of association can be a valid response to the growing power of the distributors (large distribution chains), to the phenomena of M&A between large groups of companies, to consumers who are becoming increasingly demanding and be fine-tuned with product and processing technological innovations (Bleeke, Ernst, 1994)

Where such forms of association cannot be implemented, especially SMEs will have to concentrate their resources by structuring a high-value-added offer with a high service component.

Emerging innovation in F&V sector

Innovations in the F&V could cover a very wide perspective: genetics, farming, etc. However, a very interesting perspective concerns the processing phase from fresh fruits and fresh vegetables to ready-to-eat products, because of market interest towards this alternative. Research in this field is mainly based on the fact that, being cut, fruits and vegetables are easily exposed to microbial contamination and generating serious safety issues.

Process for ready-to-eat fresh fruit and vegetables does not include a so-called “killing step” determining a final microbial count near to zero. Being fresh products safety mostly depends on the implementation of good agricultural and manufacturing practices. A number of surveys though indicate that fresh-cut products may represent an underestimated public health risk due to the possible presence of pathogenic bacteria known to cause serious illness in the consumers (Sagoo et al., 2003; Nabi et al., 2011; Kovacevic et al., 2013).

In addition, fresh-cut fruits and vegetables are composed of living cell tissue, intensively metabolizing, the more since it has been peeled and cut in portions to increase consumer convenience. Because of this appearance, texture, flavor, and nutritional value may be degrading very fast and commercial life is, in most cases, a matter of days.

On these premises fresh-cut produce has represented in the last few years, a very interesting food system to implement latest innovations on quality and safety.

The word QUAFETY, a neologism for a global approach in quality and safety as a composite all-inclusive strategy, started as the short name for a collaborative 3-year R&D project co-funded by the European Commission (Comprehensive Approach to Enhance Quality & Safety of Ready-to-eat Fresh Products), aimed at improving safety and quality of ready-to-eat fresh produce throughout the whole supply chain (Amodio et al., 2016).

QUAFETY project included 14 partners from 7 countries, with diverse scientific and technological expertise, including 6 SMEs, 2 public research Institutes, and 6 Academic Institutions. Its main purpose was to improve quality and safety of fresh-cut produce throughout the whole chain, reaching the following partial objectives:

- to provide the industry with diagnostic kits for the evaluation of microbial contamination and shelf-life determination;
- to provide useful tools for process control based on non-destructive and rapid measurements;
- to provide the industry operators with decision supporting tools at critical points in the fresh-cut processing chain from genotype selection to economic strategic planning;
- to develop and implement process innovations aimed to improve safety and quality;

- to consider consumers' response to safety and quality attributes deriving from the novel applications in order to evaluate the impact on markets and profitability implications for the industry;
- to design and implement a more effective and efficient Quality/Safety Management System for the fresh-cut produce industry;
- and finally to disseminate in a modern and efficient way all the innovative products from the project.

Below is a partial list of outcomes from the Project:

- Pathogen detection: the MPN-Q-PCR method could be used in support of standard methods in the periodical analysis of the raw produce, the final products, as well as the processing line, allowing an early detection of a critical event and a faster application of corrective action (Russo et al., 2015).
- Recommendation on how to control L. monocytogenes biofilm formation to prevent the contamination of the processing line by the pathogen in fresh-cut RTE companies (Botticella et al., 2013).
- Smelling shelf-life: collection of volatile organic compounds (VOCs) for analysis by TD–GC–TOF MS onto a tube packed with a sorbent material, allowing quantitative assessment of the complete aroma profile at any point within a processing plant, following shipment of tubes to equipped laboratories for analysis. VOCs retain sufficient discriminatory power to assess shelf life or can be used as quality/safety markers also in the detection of contamination with human pathogens such as L. monocytogenes (Spadafora et al., 2016).
- Support for decision making: a software tool that helps the industry in choosing the innovation that suits their needs (product improvement, efficiency of analysis, etc.) and characteristics (employee skills, level of investments, etc.) is now available.
- Molecular approach to quality & safety: antibodies identified against pathogenic bacteria or senescence-associated proteins can be used at industry level to check the

quality of raw materials or of the product at any stage of the distribution chain (Cavaiuolo et al., 2015).

- Process innovation: hot-water treatment protocols and effects on the increase of nutritive value of selected products (higher content of soluble phenols and decrease of nitrates l).
- Nutritional audit: identification of critical steps in fresh-cut processing lines for nutritional and functional markers and microbial growth affecting quality and safety of selected commodities.
- Predictive models: a tool for packaging design of fresh cut produce, predicting the time course during storage of oxygen and carbon dioxide in the package head space, supporting the choice of optimal packaging film.
- Predictive models: for a given product (i.e. commodity and type of package) mathematical relations between external and internal attributes were developed and tested for the prediction of quality during distribution under different environmental conditions (Amodio et al., 2015).
- Genotype evaluation: the new Sorbeto hybrid was selected as a melon which is very well-suited for fresh-cut processing.
- Packaging innovation: a tool for optimal package perforation with or without gas flushing provided O_2 and CO_2 levels controlling microbial spoilage of fresh-cut selected commodities without fermented off-flavor.
- Hands-off equipment: a prototype machine for mechanical preparation of fresh-cut melons and watermelons without manual operations has been designed, manufactured and tested.
- Process innovation: exposure of fresh-cut melon pieces to UV-C (7-10 kJ m-2) before sealing the packages, controlled microbial proliferation on the produce during its shelf-life, without significant negative effects on produce quality.
- Process innovation: Coating fresh-cut melons with optimal composite biopolymers reduced microbial proliferation and preserved texture (Poverenov et al., 2014).

- Production procedures: Ebb and Flow is more suitable compared to a Floating System for growing leafy species destined to fresh-cut processing. An EC of 3.5 dS/m in the nutrient solution gives the best yield and product quality.
- Equipment innovation: a prototype installation using thermal flame decontamination of melon surfaces was built and found to be more efficient than standard procedures.
- Alternatives to chlorine: An innovative method to treat produce washing water with ultrafiltration and ClO_2 was shown to increase sanitation efficiency and reduce water consumption, as a viable alternative to the use of sodium hypochlorite.

Project results were thoroughly disseminated to potential users (i.e. Food industries, consumers, health institutes, mass media, etc.) by online websites, direct seminars, training courses, conference attendance, scientific papers in peer-reviewed journals, and industry workshops.

A survey to EU researcher

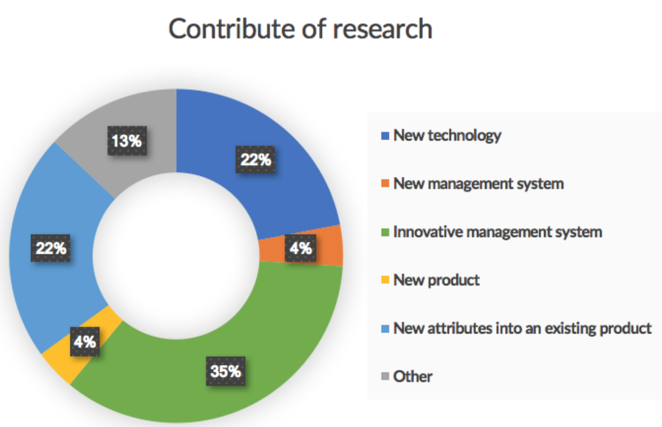
In order to depict information on future innovations in the field of F&V, in depth interviews with F&V related researchers coming from different Universities and Research Centers have been conducted within the QUAFETY project (www.quafety.eu).

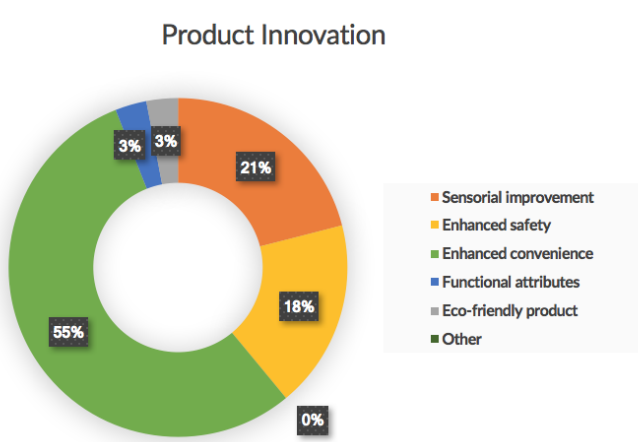
Interviews and discussions into a focus group environment have been conducted starting by a series of questions prepared ad hoc. Those questions aim at understanding the specific activities of researchers cooperating into QUAFETY, understanding how likely the research will produce successful results, how likely the outcome of the innovations could be brought at industrial level, how likely those innovation could impact quality of products and more specifically those attributes that are effectively perceived by consumers and used for their choice such as taste, flavor, color, etc. At the end of interviews, answers have been codified and imputed into a database in order to have the possibility to calculate answer frequency and some basic descriptive statistics.

Information retrieved has been summarized and attributes have been identified. Throughout a focus group discussion among marketing and economics scientists, attributes have been divided into levels that could identify substitute products that are actually present in products on market or eventually exist as outcome of the researches within the project.

Outcomes of in-depth interviews and focus groups have allowed systematizing the outcomes into a database.

Table 1 – Ongoing research on F&V





Contribute of research	
New technology	22%
New management system	4%
Innovative management system	35%
New product	4%
New attributes into an existing product	22%
Other	13%
Product Innovation	
Sensorial improvement	21%
Enhanced safety	18%
Enhanced convenience	55%
Functional attributes	3%
Eco-friendly product	3%
Other	0%
Specific product improvements	
Shelf life	
Reduction microbioal load	
Better quality and sensorial characteristics	
Better safety control of products	
Better management for higher safety	

Outcomes show that about 26% of researches are focused on product innovation-diversification. Just 15% of those activities focus on the creation of a completely new product while the remaining 85% concern the improvement of existing products. Sensorial quality, enhancement of convenience through a longer shelf life and increased safety of products are the main objectives of ongoing research. 53% of researchers believe that results of research will be scaled up at industrial level, 80% of them believe that there will be a positive outcome.

78% believe that those product innovations will have influence on consumers' purchasing probability while the estimated average of increase in production costs is 12%. 30% of researchers believe that the product improvement could result into labeled information that consumers could use for purchase.

Emerging markets: Far East and China market outlook

Lately, high attention has beenn paid to the emerging markets. Venture capitalists and public bodies investing into food industry, in the last few years has been given to Chinese market (The Boston Consulting Group 2013; McKinsey report, 2017).

1.1.1. Chinese market highlights

China undoubtedly represents one of the markets to which European companies, both SMEs and large ones operating in the fresh-cut business, must carefully monitor for the enormous commercial potentialities.

There are micro and macro factors that motivate this assumption. The authors propose the economic and extra-economic factors that suggest European companies to look sensibly at this market.

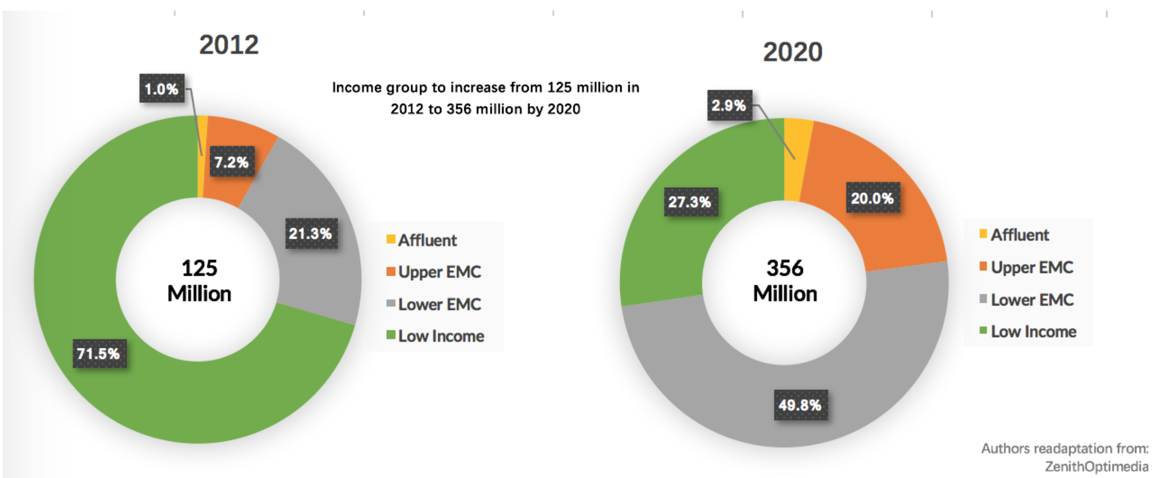
Accelerators for China growth in the future:

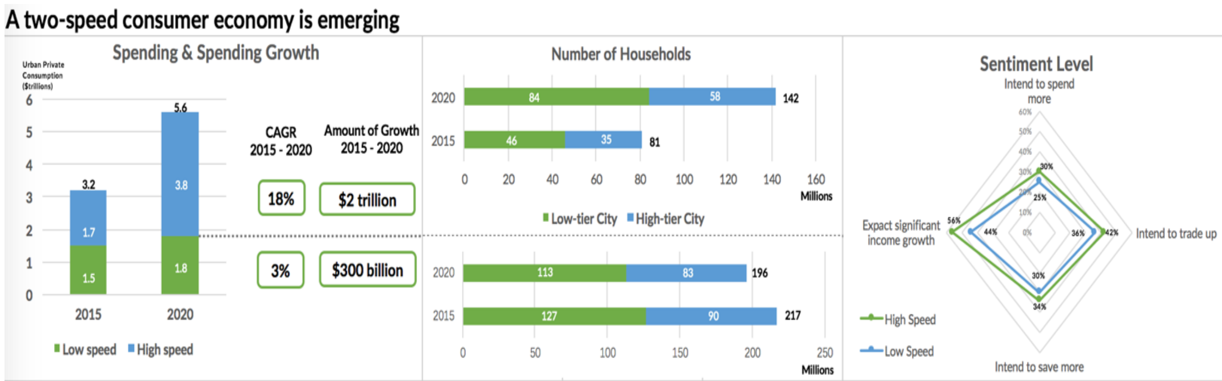
- 1.4 billion People about to feed. China is home to 22% of world's population but only 9% of its arable land;
- Middle Class is going to triple by 2020;
- Household income growing rapidly;

- World's leading exporter of fruit and vegetables;
- World's leading importer of fresh fruit and vegetables;
- In the long term, China has an increasing need for food supply and reduced waste;
- More money to purchase quality food;
- More demand for global brands.

In particular the increase of the middle class in China is a factor that will affect the growth of sustainable consumptions. Major growth in Middle Class is expected to triple by 2020. A high percentage will require more processed food and demand higher quality food standards. Doubling of spending to be expected due to 2-speed development, highest growth in high tier cities with most spending power, but still biggest population in lower spending areas (The Boston Consulting Group 2013).

Picture 5 – China's Emerging Middle Class (BCG 2013)

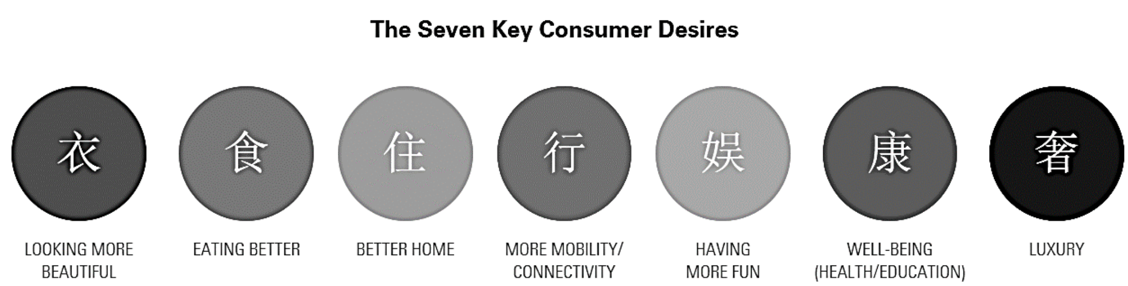




Authors readaptation from: Economist Intelligence Unit; National Bureau of Statistics of China; BCG China Consumer Sentiment Survey, 2015; BCG Analysis

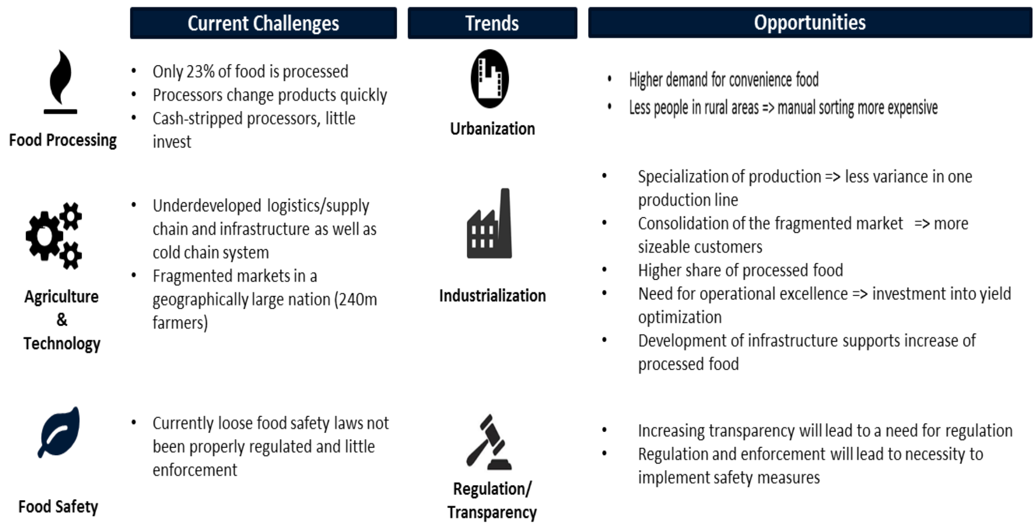
According to Goldman Sachs's analysis, Chinese consumer spending can be broken down into seven categories (Picture 6): The Seven Key Consumer Desires (Goldman Sachs, 2015), which highlight that eating better and well-being are key factors for the Chinese consumers.

Picture 6 – The Seven Key Chinese Consumer Desires (Goldman Sachs, 2015)



Despite European companies targeting to enter in the Chinese market will face several challenges, meaningful trends will lead to future opportunities (Picture 7).

Picture 7 - China's challenges, trends and opportunities



1.1.2. The Chinese consumer profile

According to the research of the consulting company McKinsey (McKinsey report, 2017) a rising post-90s generation is emerging as a strong engine of consumption, in one of four important new trends in the Chinese consumer framework. Digging deeper into the attitudes and behaviors of consumers we can see a more multifaceted set of consumer segments, each with unique characteristics that determine their shopping habits.

This is what McKinsey has done with a latest survey of nearly 10,000 consumers aged 18 to 65 across 44 cities and seven rural villages and towns across China (McKinsey report, 2017).

Trend 1: Consumers are confident—but risks remain

Consumer confidence has grown significantly in China to reach a ten-year high. On the back of this rise in confidence, consumers have been spending more on discretionary items. On the other hand, high levels of private debts could have a negative influence in the future. Chinese consumers are also running up against high real-estate costs, especially in tier-one cities, despite government measures to cool the market. While these are all relatively short-term indicators, in the longer term, the rising costs of caring for elderly family members, particularly the healthcare expenses associated with such care, is set to become one of the biggest burdens on the budgets of Chinese consumers.

Trend 2: Consumers are more health-conscious than ever before—but different consumers define health differently

In the past few years, according to McKinsey's report, we can notice a substantial uptick in the number of Chinese consumers concerned about their health and the impact that diet, exercise, and the environment have on their quality of life. In 2017 survey is showed that 65 percent are seeking ways to lead a healthier lifestyle. But this belies a more worrying trend: millions of Chinese consumers have access to and can afford more types of food than ever before, and their bulging waistlines are evidence of this phenomenon.

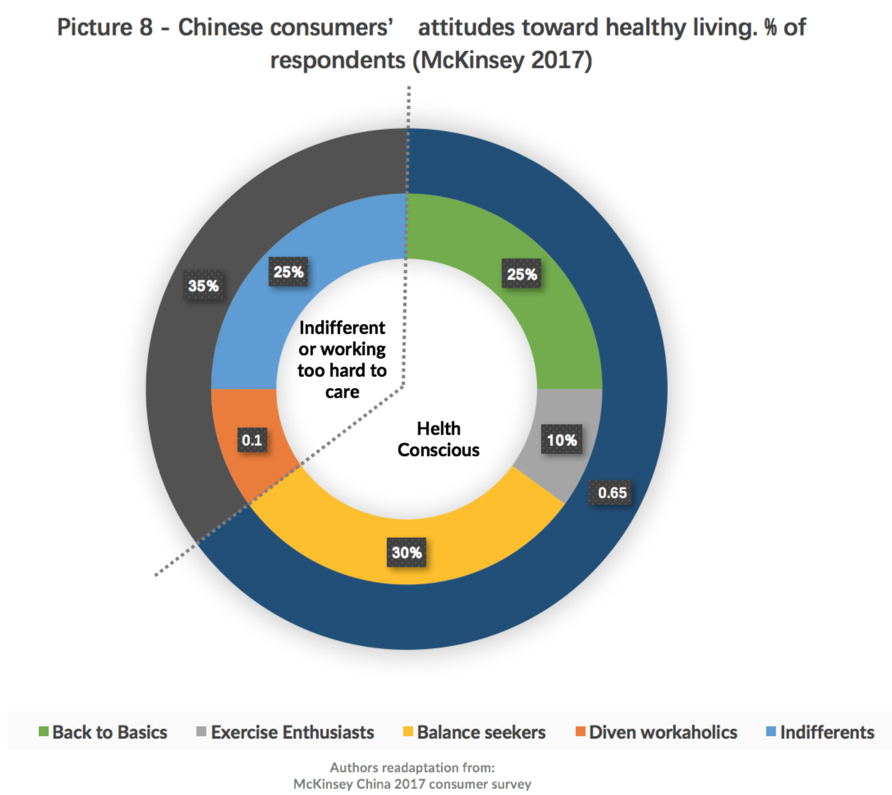
Thirty percent of Chinese adults—roughly 320 million people—are overweight and about 6 percent obese.

The Government has responded: in 2016 it announced the "Healthy China 2030 plan," which pledged to promote initiatives geared toward diet, exercise, and access to healthcare services.

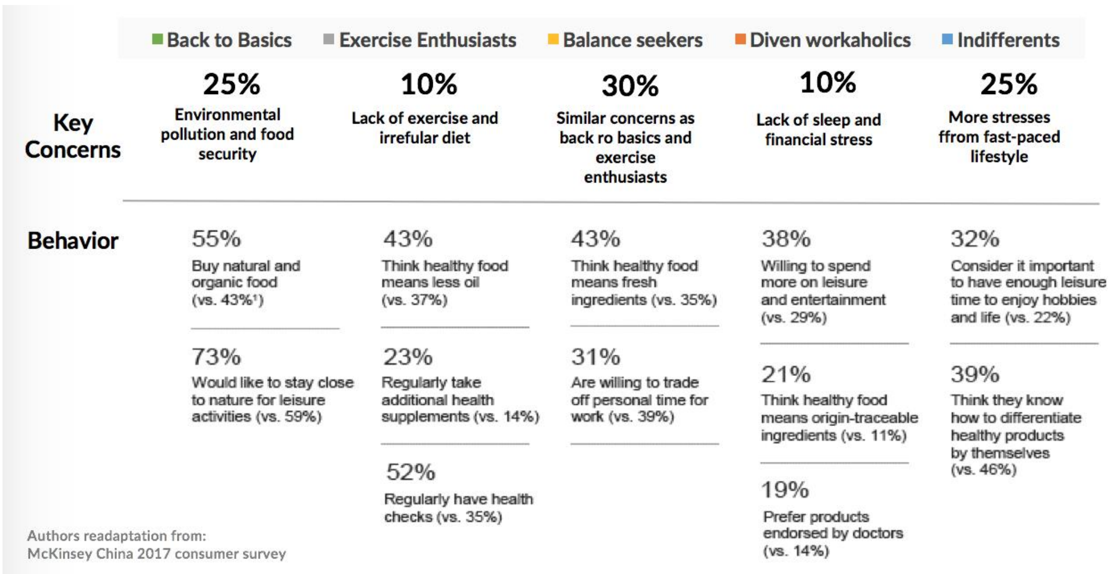
The cited survey highlighted the early stages of shifting attitudes, especially toward healthy eating. Forty-one percent said "almost never" to eating unhealthy food. The instant-noodle and soda markets shrank by 7 percent and 2 percent respectively in 2016 compared with 2015. And, fast-food chains, already thought of as healthier than hole-in-the-wall restaurants and roadside stalls, continue to expand with healthier menu options. Of course, Chinese consumers don't all share the same views toward health and in the McKinsey analysis have been identified five distinct segments of consumers based on their different attitudes toward health (Picture 8 and 9). Three segments, representing 65 percent of respondents, are deeply concerned about this issue but express it in very different ways. The "back to basics," "balance seekers," and the "exercise enthusiasts" will become more important and companies will need to create thought

ful messaging and marketing. Drilling down into the detailed nuances of this vast and complex consumer group is key to success.

Picture 8 - Chinese consumers' attitudes toward healthy living. % of respondents (McKinsey 2017)



Picture 9 - Different consumers define health differently (McKinsey 2017)



Trend 3: The 'post-90s' generation is emerging as a new engine of consumption

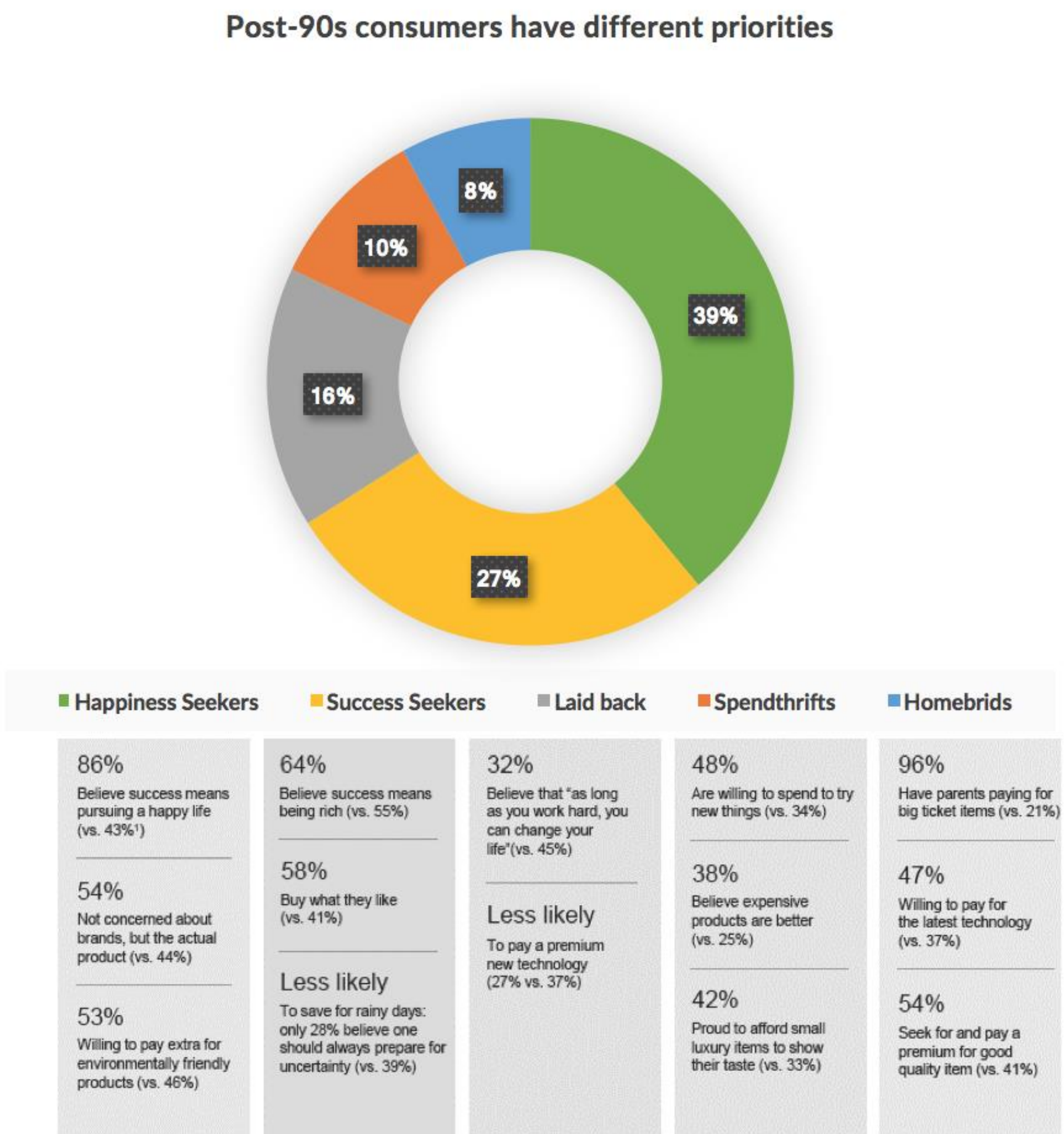
McKinsey research shed new light on one of the fastest-growing and increasingly influential segments of Chinese consumers—what we call the "post-90s" generation. While many reports in recent years have grouped China's younger generation under the familiar term millennials, this term doesn't fully capture the unique attributes of this segment of the population, which we define as people born between 1990 and 1999.

This generation exhibits very different behavior and attitudes not only with older generations of Chinese consumers but also the generation that we call the "post-80s," which is generally lumped together with the post-90s generation in media reports that cover this topic. They also differ to Western millennials.

The post-90s generation grew up in a China unknown to their parents, one marked by extraordinary levels of wealth, exposure to Western culture, and access to new technologies. Comprising 16 percent of China's population today, this consumer cohort is, according to McKinsey's projections, going to account for more than 20 percent of total consumption growth in China between now and 2030, higher than any other demographic segment.

Asking them their attitudes toward certain areas of life—success, health, family, brands and products, and their future—yielded, in many cases, very different answers, which affects how they choose products and services. We sorted them into five distinct segments (Picture 10).

Picture 10 - Post-90s consumers have different priorities



Authors readaptation from:
McKinsey China 2017 consumer survey

Each segment differs and all segments differ again from Western millennials. Companies that think carefully about their story and whether it will resonate with these segments based on their beliefs and attitudes will have an advantage.

Trend 4: Chinese consumers are taking a more nuanced view of brands, both global and local

In past McKinsey's surveys, we saw Chinese consumers take a strong interest in international brands. In other years, they acquired an interest in local brands. In recent years, they have developed a sharp eye for brands that deliver value for money.

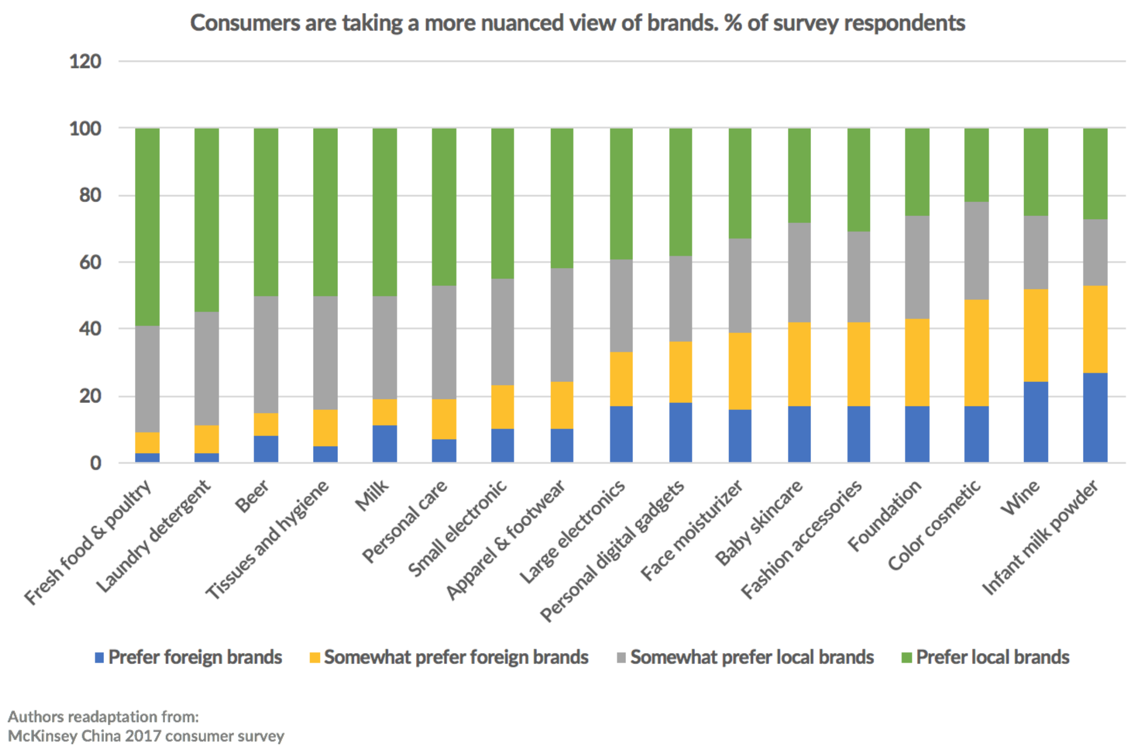
In 2017 year's survey, we've observed consumers taking a more nuanced view of the brands they choose.

Across the majority of categories surveyed, brand origin matters less than before. Consumers today have very clear expectations and they apply to local and foreign brands alike. First and foremost, they want value for money. That's followed by quality products—they want their unique tastes catered to—and, lastly, they demand good aftersales service.

In 8 of the 17 categories surveyed, respondents showed clear preferences for local brands because they deliver in these three areas (Picture 11). Combined, these categories account for more than half of the total retail sales in China.

In many cases, Chinese brands have become credible competitors. Cost is less of a concern among today's consumers, who appear to be preoccupied by quality.

Picture 11 - Consumers are taking a more nuanced view of brands. % of survey respondents (McKinsey 2017)



However, as with the health-conscious consumers described earlier, a mismatch exists between perception and reality when it comes to brand selection. There is no longer a single, one-size-fits-all definition of the Chinese consumer. These increasingly discerning shoppers are younger, healthier, and more brand savvy than ever, and they demand more from the products and services they buy. Both global and local companies must understand these nuances if they hope to craft brand and product messages that appeal to them.

Future perspective in Fruits and Vegetables markets

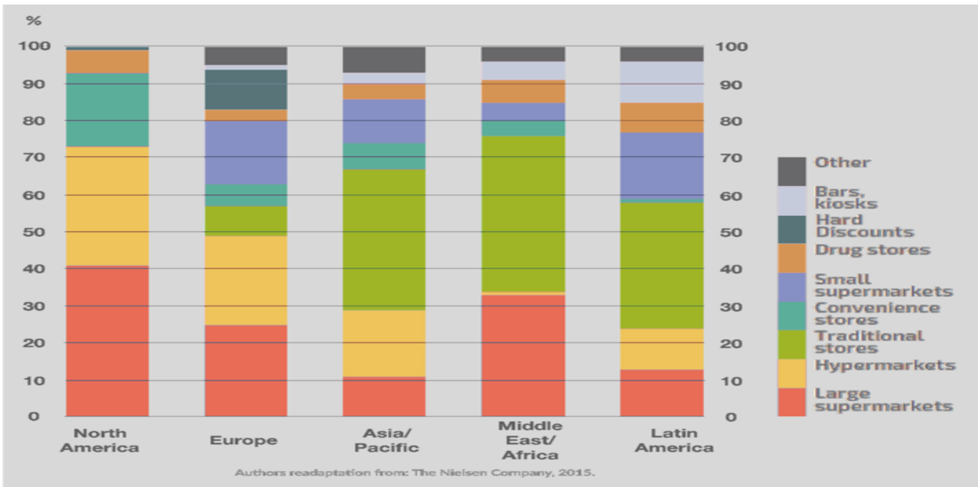
Recent analysis reviewing the emerging trends in selected supply chain of the food industry and changes in consumers' choices and in the F&V sector growth is essentially addressed to a demand of higher safety standards and ready to eat attributes. Fresh-cut products, being ready and of easy consumption, represent an interesting innovation for the industry (Santeramo et al., 2017).

Food production is changing along also with retail channels. Agriculture and food production are increasingly supplying urban and peri-urban supermarkets. Value chains are progressively characterized by the vertical coordination, and in some instances the integration, of primary production, processing and distribution; the automation of large-scale processing; and higher capital and knowledge intensities. Over the last 10 years, the share of fresh food distributed through supermarkets has remained below 50 percent in high-income countries, below 30 percent in upper middle-income countries and around 10 percent in lower-middle income countries. However, global figures hide regional specificities (FAO, 2017).

Hypermarkets, large supermarkets and convenience stores account for 93 percent of consumer purchases in North America but, as Picture 12 shows, play

a much more modest role in Europe (55 percent), Latin America (46 percent), Middle East and Africa (38 percent) and Asia (36 percent). Another characteristic of Europe and Latin America is the existence of small supermarkets, which account for almost 20 percent of sales. It is difficult to say whether these small supermarkets, as well as traditional forms of commerce, will maintain their market share, or be absorbed by larger enterprises or evolve into other forms of distribution, such as hard discounts or large specialty shops. There is probably room for diversified forms of distribution, particularly in the light of emerging forms of e-commerce focused in the 'last-mile' of the distribution system (The Nielsen Company, 2015) and emerging preferences for ethical and ecological food.

Picture 12 - Share of the food retail trade, by channel and region (The Nielsen Company, 2015)



From farmers market to fresh-cut produce on the shelves is the leitmotiv of our analysis. Capital-intensive value-chain, corresponding to the "from fresh-cut to grocery store" approach hides risks and equity issues. For many small-scale operators, issues of financing, market accessibility and transport, as well as the range of standards related to quality, traceability and certification make participation in integrated value chains difficult. The concentration of purchasing power in the hands of a few supermarket chains allows them to require that suppliers maintain large stocks. Smallholder farmers benefit from the transformation of food systems when they are able to join vertically coordinated value chains through fair contracts with processors and traders. In recent decades, a variety of business models, national and international value chain organizations, and institutional arrangements and policies have emerged to provide incentives and support services to smallholders, with the aim of increasing sustainable food production and facilitating market access (FAO 2017).

In addition, to improve the efficiency of food delivery systems, these value chains have helped improve food quality and safety, which benefits consumer health. At the same time, they have facilitated the diversification of diets among more affluent consumers, accelerating the shift from starchy staples to F&V. More affluent consumers tend to adopt globally connected lifestyles that increase the demand for novel foods (FAO 2017).

Various authors such as Santeramo et al. (2017) pinpoints that the fresh-cut European industry must face consumers' expectations and challenges such as the need to ensure safe food, while keeping in mind global sustainability.

A challenge for the industry is in fact to orient consumption towards food that are sustainably produced. From farmers market to fresh-cut produce on the shelves is undoubtedly an important supply chain model that could drive a further growth of the fresh-cut business, provided there is a synergic and mutual benefit relationship within the strategic triangle: consumers', farmers-producers, and distribution channels.

A valuable, but futuristic hypothesis, could be the personalized supply, which is the direct offer to specific niches of consumers, the so called "lond tail stratefy" (Anderson, 2006). Such an approach could involve direct relationships, hence farmers market approach, and complement with high level of convenience.

Conclusions

F&V represent a key industry for diet with worldwide importance. While general trends of consumption are showing a decrease, population changes, income inequalities and emerging lifestyles have split the world into two trends: malnutrition and reduced consumption because of changing preferences and preparation time constraints. In such a framework, the innovations in terms of convenience find room for making F&V consumption growing. This potential is particularly relevant in emerging economies such as China, while in western countries record already steady markets for those products. Meanwhile, distribution industry exhibit market power against the supply chain with negative impact on small agricultural producers. Expectations for future are strong investments into emerging markets, reorganization of the supply chain pointing at a more and more “personalized” product approach, with high level of product diversification and a consequent new vision of distribution and sales.

CHAPTER 2

Fresh-cut: an innovative Ready To Eat food products consumption model for the Chinese consumers

1. Abstract

There is a growing focus on more healthy and sustainable food consumption emerging by the Chinese consumers. In particular the food scandals of the past years have turned the spotlights on issues such as the attention to what the Chinese consumer eats, the awareness that a primary goal is to increase the quality of life, a careful observation of the food consumption models from Western countries. These are amongst the key factors that motivate the interest of the authors to evaluate what are the potentialities to affirm fresh-cut or Ready To Eat (RTE) products in China as well. The analysis we present aims to analyse the behavior of Chinese consumers and be a stimulus for the Western companies to look with interest at this new model of consumption, in this corner of our planet.

During first quarter of 2019 the authors developed a questionnaire and proposed it to more than 530 Chinese consumers who exemplify undeniably interesting answers, very useful in understanding what are the fundamental issues that companies need to pay attention to.

At the end of the analysis phase, the authors aim to suggest a possible business model - the green marketing matrix (J. Grant, 2017) - to companies that want to approach the Chinese market with their fresh-cut product offering.

2. Objectives of the research

The questions to which the authors intend to contribute are:

1. What are the potentials of the fresh-cut consumption model in China?
2. Can we profile the Chinese consumer and her / his behavior in purchasing RTE products?

3. What are the critical success factors for a company targeting to enter into the Chinese market and seize its opportunities?
4. What business model Western companies can use to enter the Chinese market?

3. Introduction

3.1 Chinese Market Highlights.

China undoubtedly represents one of the markets to which European companies, both SMEs and large ones operating in the fresh-cut business, must carefully monitor for the enormous commercial potentialities.
There are micro and macro factors that motivate this assumption. The authors propose the economic and extra economic factors that suggest European companies to look sensibly at this market.

Accelerators for China's growth in the future
(Bain, 2018 and 2019; IMF, 2018; OECD-FAO Agricultural Outlooks 2017-2026 and 2013-2022; McKinsey 2019)**:**

- 1.4 billion people to feed. China is home to 22% of world's population but only 9% of its arable land;
- Middle class is going to significantly increase by 2020;
- Household income growing rapidly;
- World's leading exporter of F&V;
- World's leading importer of fresh F&V;
- In the long term, China has an increasing need for food supply and reduced waste;
- More money to purchase quality food;
- More demand for global brands.

In particular the increase of the middle class in China is a factor that will affect the growth of sustainable consumptions. Major growth of the middle class is expected to significantly increase by 2020. A high percentage will require more processed food and demand higher quality food standards. Doubling of spending to be expected due to 2-speed development, the highest growth in high tier cities with the most spending power, but still the biggest population in lower spending areas (The Boston Consulting Group, 2013).

3.2 The Chinese Consumer Profile

According to Goldman Sachs's analysis, Chinese consumer spending can be broken down into seven categories (Figure 1): The Seven Key Consumer Desires (Goldman Sachs, 2015), which highlight that eating better and well-being are key factors for the Chinese consumers.

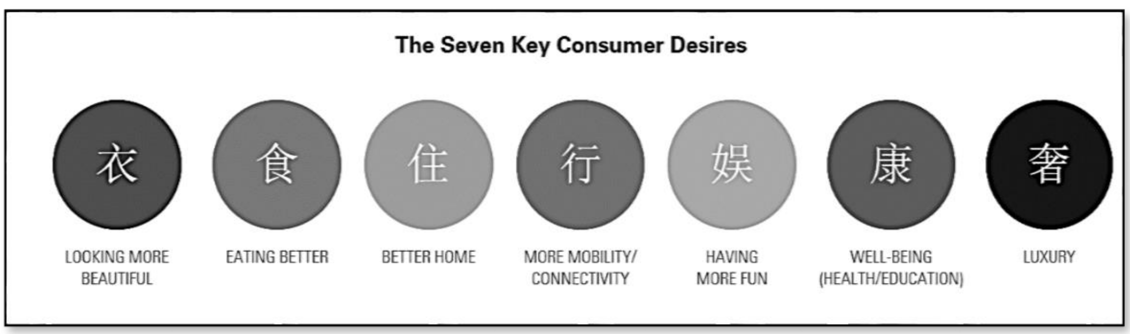


Figure 1 - The Seven Key Chinese Consumer Desires (Goldman Sachs, 2015)

In light of a research conducted in China by the consulting company McKinsey a rising post-90s generation is emerging as a strong engine of consumption, in one of four important new trends in the Chinese consumer framework. Digging deeper into the attitudes and behaviors of consumers we can see a more multifaceted set of consumer segments, each with unique characteristics that determine their shopping habits.

The following analysis is what McKinsey has done with a latest survey of nearly 10,000 consumers aged 18/65 across 44 cities and 7 rural villages and towns across China,

representing approximately 90 percent of China's GDP and more than half of its population. The survey was conducted from May to July 2017.
Mc Kinsey conducted a combination of online and offline research with respondents, covering consumers' general attitudes and purchasing behavior, key trends regarding their consumption patterns and leisure habits, and attitudes toward life, success, money, and health (Mc Kinsey, 2017).

Trend 1: Consumers are confident – but risks remain

Consumer confidence has grown significantly in China to reach a 10-year high. On the back of this rise in confidence, consumers have been spending more on discretionary items. On the other hand, high levels of private debts could have a negative influence in the future. Chinese consumers are also running up against high real-estate costs, especially in tier-one cities, despite government measures to cool the market. While these are all relatively short-term indicators, in the longer term, the rising costs of caring for elderly family members, particularly the healthcare expenses associated with such care, is set to become one of the biggest burdens on the budgets of Chinese consumers (Mc Kinsey, 2017).

Trend 2: Consumers are more health-conscious than ever before – but different consumers define health differently

In the past few years, according to McKinsey's report, we notice a substantial increase in the number of Chinese consumers concerned about their health and the impact of diet, workout, and the environment on their quality of life. A 2017 survey shows that 65% of Chinese consumers are seeking a healthier lifestyle. But this belies a more worrying trend: millions of Chinese consumers have access more types of food than ever, and the increase in obesity rate is the evidence of such a phenomenon.

Thirty percent of Chinese adults—roughly 320 million people—are overweight and about 6% are obese. The government has responded: in 2016 it announced the "Healthy China 2030 plan," which pledged to promote initiatives geared toward diet, exercise, and access to healthcare services.

The cited survey highlighted the early stages of shifting attitudes, especially toward healthy eating. Forty-one percent said "almost never" to eating unhealthy food. The instant-noodle and soda markets shrank by 7% and 2% respectively in 2016 compared with 2015. And, fast-food chains, already thought of as healthier than hole-in-the-wall restaurants and roadside stalls, continue to expand with healthier menu options. Of course, Chinese consumers don't all share the same views toward health, and the McKinsey analysis identified five distinct segments of consumers based on their different attitudes toward health. Three segments, representing 65% of respondents, are deeply concerned about this issue but express it in very different ways. The "back to basics," "balance seekers," and the "exercise enthusiasts" will become more important and companies will need to create thoughtful messaging and marketing. Drilling down into the detailed nuances of this vast and complex consumer group is key to success (Mc Kinsey, 2017).

Trend 3: The post-90s generation is emerging as a new engine of consumption

McKinsey research shed new light on one of the fastest-growing and increasingly influential segments of Chinese consumers—what we call the post-90s generation. While many reports in recent years have grouped China's younger generation under the familiar term millennials, this term doesn't fully capture the unique attributes of this segment of the population, which we define as people born between 1990 and 1999.

This generation exhibits very different behavior and attitudes not only with older generations of Chinese consumers but also the generation that we call the post-80s, which is generally lumped together with the post-90s generation in media reports that cover this topic. They also differ to Western millennials.

The post-90s generation grew up in a China unknown to their parents, one marked by extraordinary levels of wealth, exposure to Western culture, and access to new technologies. Comprising 16% of China's population today, this consumer cohort is, according to McKinsey's projections, going to account for more than 20% of total consumption growth in China between now and 2030, higher than any other demographic segment.

Asking them about their attitudes toward certain areas of life—success, health, family, brands and products, and their future—yielded, in many cases, very different answers, which affects how they choose products and services. We sorted them into five distinct segments.

Each segment differs and all segments differ again from Western millennials. Companies that think carefully about their story and whether it will resonate with these segments based on their beliefs and attitudes will have an advantage (Mc Kinsey, 2017).

Trend 4: Chinese consumers are taking a more nuanced view of brands, both global and local

In past McKinsey's surveys, we saw Chinese consumers take a strong interest in international brands. In other years, they acquired an interest in local brands. In recent years, they have developed a sharp eye for brands that deliver value for money. In the 2017 survey, we've observed consumers taking a more nuanced view of the brands they choose.

Across the majority of categories surveyed, brand origin matters less than before. Consumers today have very clear expectations and they apply to local and foreign brands alike. First and foremost, they want value for money. That's followed by quality products—they want their unique tastes catered to—and, lastly, they demand good aftersales service. In 8 of the 17 categories surveyed, respondents showed clear preferences for local brands because they deliver in these three areas. Combined, these categories account for more than half of the total retail sales in China. In many cases, Chinese brands have become credible competitors. Cost is less of a concern among today's consumers, who appear to be preoccupied by quality.

However, as with the health-conscious consumers described earlier, a mismatch exists between perception and reality when it comes to brand selection. There is no longer a single, one-size-fits-all definition of the Chinese consumer. These increasingly discerning shoppers are younger, healthier, and more brand savvy than ever, and they demand more from the products and services they buy. Both global and local companies must understand these nuances if they hope to craft a brand and product messages that appeal to them (Mc Kinsey, 2017).

4. Methodology

In light of these central premises, which allow us to better understand the background of our research, the authors during the first quarter of 2019 proposed to more than 530 consumers (all born in China), selected after a careful screening, a questionnaire. The objective of the questionnaire is to analyse:

• The profile of middle class Chinese consumers for the purchase of fresh-cut fruit and vegetables (cut, washed and wrapped, preserved in modified atmosphere, shelf life of 7 days)
• The measurement of the perception of these products as their quality and price attributes vary
• Extrinsic attributes (on the label) that most orient the choices
• Elements that hinder/restrict the purchase or proof of such products
• Measure the level of awareness of such products
• Access to products (perception)

To whom has been submitted the questionnaire (the panel):

- Consumers Shanghai, Jiangsu (Suzhou city) and Zhejiang (Ningbo city) areas
- Consumers of all metropolitan city bands

The questionnaire was conducted from January to April 2019

The questionnaire was developed through 47 questions spread out 5 variables:

1. Screening and socio-demographic questions
2. Awareness of ready to eat fruit/vegetable/salad product (RTE = Ready To Eat)
3. Consumption habits
4. Factors affecting consumption
5. Quality attributes

Author conducted a combination of online and offline research with respondents, covering consumers' general attitudes and purchasing behavior, key trends regarding their consumption patterns and leisure habits, and attitudes toward fresh cut produce. Participation to the questionnaire was proposed to potential consumers through direct interviews, LinkedIn, and WeChat (Tencent group) platforms.

The following analysis will focus on the assessment of the output of the most significant questions.

5. Key outcomes of the research

A. ***Screening and socio-demographic questions*.**

- Geographical origins. 100% of respondents in the questionnaire are Chinese citizens

- Gender. 51.7% of respondents are women and 48.3% are male. This result confirms that there is a significant approach to the issues of healthy food also by the male consumer, more attentive, than in the past, to a healthier consumption.

- Age groups of respondents:

<20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60
19	98	175	60	94	30	29	10	2
3.7%	19.0%	33.8%	11.6%	18.2%	5.8%	5.6%	1.9%	0.4%

Undoubtedly the age groups 21-25, 36-40 and 26-30 are the most represented.

Studies have shown that Millennials confirm themselves as the engine of the change that is taking place in the Chinese market. China's millennial generation is affecting a rising influence on the Chinese and international marketplaces, disrupting economic models and driving innovation. As they hold everything from mobile e-commerce and the sharing economy to international travel and stay-at-home culture, they are driving an increasing range of companies - both Chinese and Western - to re-examine how they do business (McKinsey 2019 and 2017; The Boston Consulting Group, 2013).

- Highest level completed education. 86.7% of the respondents have a medium level of education. Very low is the percentage of respondents with a graduate or post-graduate degree. According to the sample of participants interviewed there does not seem to be a relationship between the level of education and consumption of RTE products.

Primary school	College	University	Master	PhD
59	443	0	1	8
11.5%	**86.7%**	**0.0%**	0.2%	1.6%

- Income (value in RMB: 1 Euro = 7.9 RMB about).

less than 10,000	10,000-15,000	15,001-20,000	20,001-25,000	25,001-30,000	30,001-35,000	35,001-40,000	40,001-45,000	more than 50,001
46	97	127	106	48	35	21	13	21
8.9%	18.9%	**24.7%**	20.6%	9.3%	6.8%	4.1%	2.5%	4.1%

It is clear that the consumer income ranges of RTE products are mainly 15,001-20,000 RMB (24.7%) 20,001 - 25,000 RMB (20.9%). These income scales are linked to middle-class membership in China

- Occupation. The following picture emerged from the questionnaire

Currently looking for a job	Free-lance	Government companies / organiza tions	Not employed or housewife	Private organization	Retired	Student
7	81	157	9	210	2	43
1.4%	15.9%	30.8%	1.8%	**41.3%**	0.4%	8.4%

RTE products' 'model' consumer works mainly in private organizations (41.3%) and for the Government (30.8%).

- Responsible of the food purchasing

Yes	No
448	69
86.7%	13.3%

Respondents who took part in the questionnaire were asked whether they are responsible for buying RTE products or not. 86.7% decide about the purchasing of RTE products.

- How many people live in the household?

1	2	More than 2
56	362	89
11.0%	**71.4%**	17.6%

We can notice the strong concentration of nucleus composed of two people.

Chinese policies have changed and now the latest saying is please have another baby. That's China message for couples after decades of limiting families to just one child. Why the turnabout? China's aging. By 2040, projections show that 24 percent of the population will be 65 or older, a slightly higher rate than in the U.S. and more than twice India's share. This threatens an economic boom that's been built on a vast labor supply. And there may not be enough able-bodied people to take care of all those seniors. So in 2016, China changed its rules to allow as many as two children. But many couples weren't convinced that two were better than one. Now there are indications that China is about to remove the limits altogether (The Washington Post, 2019).

B. *Awareness of ready to eat fruit/vegetable/salad product (RTE = Ready To Eat)*.

	Total answers	TRUE	%	FALSE	%
RTE products must be washed before being consumed	524	124	23.7%	400	76.3%
Can be consumed directly	524	320	61.1%	204	38.9%
Are treated more than the fresh alternative	524	300	57.3%	224	42.7%
Are more healthy than the cool ones	524	249	47.5%	275	52.5%
Are industrial products very far from the quality of the fresh produce	524	117	22.3%	407	77.7%
Are more controlled and selected than the cool	524	264	50.4%	260	49.6%

What emerges from the respondents can be summarized as follows:

a. The consumer is aware that RTE products do not need to be washed

b. The majority are aware that the products can be consumed immediately and do not need further preparation

c. Consumers believe that RTE products have undergone pre-treatment before being put into their packaging

d. Consumers are aware that the quality level is analogous to fresh produce

e. They think that RTE have undergone a check and selection phase similar to fresh produce.

The analysis shows that consumers are aware of the product, know the preparation modalities, do not need to be washed, that they have undergone treatments before the packaging phase, and believe on average that they are no longer healthier than the products Fresh. There are undoubtedly still margins to increase the level of product knowledge.

Point of reflection. But in China, however, most hypermarket and supermarket chains haven't gained much ground in the battle for the fresh-food shopper. Most Chinese consumers still prefer to buy fresh food from wet markets, where they can haggle over prices—a beloved cultural practice that isn't part of the shopping experience at modern grocery stores. Furthermore, Chinese shoppers perceive the products sold in wet markets as being truly fresh, straight from the farm or field (McKinsey, 2019). It's a phenomenon well rooted in the DNA of Chinese culture, and companies will need to identify the most suitable marketing levers to bypass this limitation.

C. ***Consumption habits***

			Total answers	YES	%	NO	%
FRUIT	**Have you ever purchased fruits that has been cut and packaged?**		460	436	**94.8%**	24	5.2%
FRUIT	**Do you regularly consume fresh-cut mixed fruit?**		524	299	57.1%	225	42.9%
FRUIT	**Do you regularly consume fresh-cut single fruit item?**		524	254	48.5%	270	51.5%
VEGETABLES	**Have you ever purchased vegetables that have been cut and packeged, including but not limited to RTE salads?**		455	365	**80.2%**	90	19.8%
SALADS	**Do you regularly consume RTE salads?**		524	130	24.8%	394	**75.2%**
SALADS	**Do you regularly consume packaged salads?**		524	206	39.3%	318	**60.7%**

In this section of the questionnaire respondents were asked if they ever purchased and consumed RTE or cut and packaged products. Some interesting indications are resulting from the analysis:

a. 95% about of respondents bought and consumed cut and packaged fruit
b. 80% about of respondents bought cut and packaged vegetables
c. Only 25% about have purchased and consumed RTE salads
d. 39% regularly consume packaged salads

A prevailing habit emerges where fruits and vegetables fall into the buying and consumption behaviors of the Chinese respondents. The consumptions of the salad segment is vice versa still to be developed. Careful analysis can lead to assessing the reasons that motivate these behaviors and suggest to companies to implement marketing actions aimed at conquering consumers also with this variety of RTE produce, so developed instead in the Western countries.

An eye on Chinese consumer. It is well known that the average Chinese eats little salads. These are not part of the feeding habits of the locals. It will be important to start a path of 'education' to a new consumption. However, it exists, especially in a range of so-called 'new consumers', to approach new patterns of consumption from European countries or the USA. We can mention, for example, the increasing consumption of coffee that is becoming more and more popular in China. Until a few years ago it seemed impossible to replace among the consumption habits a drink so rooted in the Chinese tradition such as tea. The China Universe is burning the stages. It should come as no surprise that the salads model is asserting itself in China quickly (McKinsey, 2019).

D. ***Factors affecting consumption***

	Total answers	YES	%	No, but will consume the product within a day	%	No, but I will consume the product within 2-3 days	%
Do you usually purchase these products for immediate consumption?	449	285	**63.5%**	23	5.1%	141	31.4%

The majority of respondents reiterated that the consumption of RTE takes place almost immediately, to support the fact that the Chinese consumer loves a fresh product in both the taste and visual aspects components.

How did you learn about these products?	Total answers	YES	%	NO	%
Use it friends/relatives/colleagues	524	153	29.2%	371	70.8%
I saw it in the distribution	524	152	29.0%	372	71.0%
Advertising	524	128	24.4%	396	75.6%
I did try it at the outlets	524	328	62.6%	196	37.4%
Traveling in other countries	524	48	9.2%	476	90.8%
Internet/social media/search engines	524	164	31.3%	360	68.7%

Analysis of the factors that influence or drive the purchase of the products unequivocally show that having tried them, mainly, or seen in stores, have affected the purchase.

Point of reflection. Companies that are present in the Chinese market have wisely identified that the majority of purchases of 'fresh' products take place where they are sold. Strategies for introducing new food products often pursue this mode of presenting new products in the assortment of retail stores or convenience stores. The consumer sees the product, tastes it, tests it, assesses whether it meets its latent or overt needs, and buys it if those needs reflect its wishes.

Where do you usually buy RTE fresh-cut or packaged fruits and vegetables?	Total answers	**YES**	**%**	**NO**	**%**
Market	524	131	25.0%	393	75.0%
Supermarket	524	**391**	74.6%	133	25.4%
7 eleven/Family Mart ..... chains	524	258	49.2%	266	50.8%
Online	524	137	26.1%	**387**	73.9%
Vending machine	524	31	5.9%	493	94.1%

This assumption is confirmed by the precise question asked to the respondents of the questionnaire: where do you usually buy RTE fresh-cut or packaged fruits and vegetables? Supermarkets and convenience stores (very popular in China with opening times 7/7 and 24/24) are the places where the target normally buys RTE fresh-cut fruit and vegetables.

	Total answers	**YES**	**%**	**NO**	**%**
When do you consume RTE products?					
Snacking	524	315	**60.1%**	209	39.9%
Lunch box at work	524	238	45.4%	286	54.6%
Regular meals	524	162	30.9%	362	**69.1%**
Others, please indicate	0	0		0	

RTE products are not experienced by the consumer as a main meal (dinner for Chinese), but as snacks (by far the prevailing answer) or as lunch-boxes. Fresh-cut businesses will need to work hard to make RTE products an essential component of food habits.

Indicate why you do not buy often or never bought fruit vegetables and salad cut and packaged	Total answers	YES	%	NO	%
Price too high	524	33	6.3%	491	93.7%
I do not know these products	85	85	100.0%	0	0.0%
I do not trust these products	524	113	21.6%	411	78.4%
I do not know where to buy them	524	63	12.0%	461	88.0%
The available products do not correspond to what I would like	524	212	40.5%	312	59.5%
Are not available in the area of my residence	524	104	19.8%	420	80.2%
The expiry date is too close	524	227	43.3%	297	56.7%

During the analysis of the factors affecting consumption, the interviewers expressly asked: indicate why you do not buy often or never bought fruit vegetables and salad cut and packaged. Let's point out three answered in particular:

A. I don't know these products

B. The expiry date is too close

C. Does not match to what I would like

Point of reflection. Areas where companies can make a contribution to bypassing the limitations are quite clearly emerging. Product and process technologies, education to conscious consumption and education are in our opinion the areas where to intervene.

E. ***Quality attributes***

In your opinion which of the following characteristics is more important or less important for ready to use salad/fruit/vegetables rather than fresh produce?	Product Appearance-Freshness	%	Origin	%	Brand	%	Organic	%	Time saving	%	Competitive price	%	Extended Expiration Date	%	Possibility to have indications on the packaging about environmental certifications	%	Availability of nutritional information on the packaging	%
Not important at all	6	1.3%	15	3.4%	17	3.8%	6	1.4%	9	2.0%	11	2.5%	19	4.3%	8	1.8%	32	7.2%
Less important	19	4.3%	58	13.1%	62	13.9%	45	10.1%	35	7.9%	38	8.6%	173	39.1%	21	4.7%		0.0%
Indifferent / somewhat important	108	24.3%	148	33.4%	146	32.8%	139	31.3%	116	26.1%	89	20.1%	1	0.2%	85	19.1%	114	25.6%
Important	149	33.5%	169	38.1%	122	27.4%	145	32.7%	194	43.6%	207	46.7%	126	28.4%	162	36.4%	162	36.4%
Very important	163	36.6%	53	12.0%	98	22.0%	109	24.5%	91	20.4%	98	22.1%	124	28.0%	169	38.0%	137	30.8%
	445	100.0%	**443**	100.0%	**445**	100.0%	**444**	100.0%	**445**	100.0%	**443**	100.0%	**443**	100.0%	**445**	100.0%	**445**	100.0%

The analysis of the responses shows in particular the following issues:

- Product appearance-freshness is an important / very important factor
- The origin of the product is not decisive
- Organic certification can be an element of reassurance to the consumer
- The RTE product type saves time, which is an important factor for the consumer
- Price is considered a critical success factor
- Careful communication on packaging regarding environmental certification and nutritional information are certainly important

On a weekly basis, considering all the RTE products (fruit, salads, vegetables), for your household how much are you willing to pay in total?			%
	• I am not interested to buy RTE products	0	0.0%
	□ Less than 50 rmb per week…	73	17.6%
	□ Between 50 and 100 rmb per week…	97	**23.4%**
	• Between 101 and 150 rmb per week..	57	13.7%
	• Between 151 and 200 rmb per week	18	4.3%
	• Between 201 and 250 rmb per week	12	2.9%
	• Between 251 and 300 rmb per week..	4	1.0%
	• Between 301 and 350 rmb per week	3	0.7%
	• Between 351 and 400 rmb per week	5	1.2%
	• Between 401 and 450 rmb per week	93	**22.4%**
	• Between 451 and 500 rmb per week	48	11.6%
	• Above 501 rmb per week	5	1.2%
	TOTAL RESPONDENTS	**415**	100.0%

The analysis of the Willingness To Pay (WTP) reveals, in particular, two price ranges that consumers are willing to pay:

- The price range between 50 and 150 RMB, which weighs about 36%
- The price range between 401 and 500 RMB, which weighs about 34%

Point of reflection. According to Nielsen researches (Nielsen, 2019), with the change in consumption habits, prices are no longer the primary factor of the consumers consider when purchasing premium products. In line with Nielsen's survey, 61% of Chinese consumers decide to purchase premium products because of the superior quality of the products, which is much higher than the global average rate (49%). This is followed by organic/natural ingredients (56%) and superior quality (54%). Similarly, consumers also are willing to pay more for exclusive series products (47%), sustainable products (49%) and socially responsible products (37%).

What did we get from the questionnaire? A behavioral profile of the Chinese consumer summary

In light of the responses received, can we trace a possible profile of the Chinese consumer and his thoughts about the fresh-cut produce? Below the authors summarize the essential points and the key issues we could collect.

If we want to profile the fresh-cut 'type' consumer, we note that it is particularly a feminine consumer, although it is very important the propensity to buy by men as well.

The target is 26 years old and up, and mainly in the 26/40 years old range, lives in households consisting of 2 people and has an average level of education.

We note that the standard consumer income level is between 15,000 /30,000 RMB, definitely in line with the Chinese middle class.

The consumer is primarily an employee, who works either in private or in governmental organizations.

Awareness of the fresh-cut product is heightened, as is the ways in which it consumes and the differences that exist with respect to so-called bulk or fresh products. Most Chinese consumers still prefer to buy fresh food from wet markets, and it's a critical factor of success companies will have to work very hard.

The panel bought, tasted and consumed, mostly chopped and packaged fruits and vegetables. On the contrary, the salad segment is still in a development phase. But there are signs of a possible future expansion of this segment as well.

Once purchased, the product is immediately consumed. The aim is to take advantage of the sensory properties of the still fresh product.

The first trial test was made in the stores. In fact, the product is normally purchased in supermarkets or convenience stores.

The consumption of fresh-cut products is experienced as an interlude, as a snack.

Many of the consumers who do not usually buy these products, despite having bought and tested them, is because they do not yet know them well, because they have a close expiry date and because they do not fully meet the expectations of what they would like.

The appearance and freshness of the product are very important factors. The price is considered a Critical Success Factor. Certification is an element that reassures and facilitates the purchase. The weekly WTP is included in the ranges 50/150 RMB and 401/500 RMB.

6. **Targeting the Chinese market.**

From the strategy to the action, as a systemic and sustainable approach for connecting with the New Chinese Consumer.

The analysis above, even within the limit of the sample interviewed, shows that there are opportunities to introduce and affirm a new model of consumption in China. What is particularly important, however, is that companies that see the Chinese market as a point of arrival should not be limited to creating only an appealing strategy. The challenge of Western companies is and will increasingly be to move from strategy to the action, to the implementation, to the execution (Bain 2018, 2019; McKinsey 2017, 2019).

Undoubtedly the cultural, economic and social substrate are elements that must be carefully evaluated and considered by the top management that must decide whether the China Universe deserves to be seriously considered. The authors have long focused on this and agreed that the model that combines not only strategic and tactical aspects that must be used to enter the Chinese market efficiently and effectively, must consider aspects such as sustainability, the healthy life style, the new lifestyles, typical of the Chinese consumer. It's a different world, not comparable to the models that companies have used to enter Western markets. Think Global, Act Local, must be a paradigm for those who want to resonate with consumers in this part of the world.

The team of researchers proposes to move from a 'traditional' marketing approach to a green-marketing oriented approach, where the five "I" of green marketing are emphasized (J. Grant, 2007):

1. Intuitive, because it makes the best alternatives accessible and understandable. It's about making sustainable innovations that look normal. Our work as researchers, creatives, of marketing is to make them intuitive, a second nature, and simple common sense.

2. Integral: combines trade, technology, social effects and ecology. Use of sustainability as an element that aims to improve the quality of life both in the present and for future generations,

thanks to the combination of economic development, on the one hand, and socio-environmental on the other.

3. Innovative: Create new products and lifestyles, but designed for an evolved Chinese consumer.

4. Inviting: positive choice, not forced. We need to develop a culture of sustainable lifestyles, create new myths and new codes, joyful and fun, but also a bit utopian and aspirational

5. Informed: ignorance is what most distorts people's behavior. The green marketing we propose has very little to do with the image of the brand and much instead with education and participation.

7. Which business model?

The business model we propose is the result of research and application of one of the most authoritative green marketing experts, John Grant. The model that the scholar has develop and proposed is the green marketing matrix, as shown below.

	GREEN	*MORE GREEN*	*EXTRA GREEN*
COMPANIES & MARKETS (public)	lead by example	develop the market	create new business concepts
SOCIAL BRAND & IDENTITY (social)	have credible partners	create tribal brands	create "trojan horses"
PRODUCTS & PERSONAL BEHAVIOURS (personal)	emphasize the benefits side	change the habits of use	act on consumption patterns
	ESTABLISH NEW STANDARDS.	SHARE THE RESPONSIBILITY.	SUPPORTING INNOVATION.
	COMMUNICATE	*COLLABORATE*	*NEW CULTURAL MODELS*

The Green Marketing Matrix (J. Grant, 2007)

Green marketing aims to achieve objectives grouped into three macro categories:

A. Green. Set new standards for responsible products, policies and pathways

B. More green. Sharing responsibility with customers

C. Extra green. Supporting innovation: new consumption habits, new services, and new business models.

There are three levels in which any type of marketing can operate:

1. Personal (product/advantages/single buyer)

2. Social (brand/horde instinct/tribe/community)

3. Public (companies as a credible source, leader or cultural partner)

From this analytical process emerges a 3x3 matrix, which helps to visualize the possibilities present within green marketing and its variety.

Green marketing has three objectives (J. Grant, 2007):

- Business results (to be achieved in the short term)
- Environmental results (to be achieved in the medium term)
- Cultural achievements (to be achieved in the long run)

A turning point in terms of awareness, engagements, commitment, potential for change. It is a path that undoubtedly proposes a great willingness on the part of the organization to bring a change management action, aimed at entering a market with huge and extremely interesting potentials.

A challenge to which only the most forward looking companies are ready to grasp and persevere to achieve the ultimate goal: to connect, empathize with the New Chinese Consumer.

But one of the limitations that companies aiming to enter the Chinese market is avoid to fall into the pitfall of the Green Marketing Myopia (J. A. Ottman, 2006). Green marketing must satisfy two objectives: improved environmental quality and customer satisfaction. Misjudging either or overemphasizing the former at the expense of the latter can be termed "green marketing myopia, a common pitfall of companies' tunnel vision, which focus on "managing products" (that is, product features, functions, and efficient production) instead of "meeting customers' needs" – (that is, adapting to consumer expectations and anticipation of future desires).

Limits of the analysis.

The theme presented by the authors is undoubtedly fascinating and the proposers are well aware of the limited consumers panel have been interviewed. But the results shine a spotlight on a very topical issue: Chinese consumers' desire for healthier, clean, and tightly controlled food will be more and more a priority.

8. Conclusions.

Current situation and future of the fresh-cut industry in China.

The Chinese fruit and vegetable industry has been basically formed its planting pattern which is based on different regionals and bases. From south to north, vegetable cultivation is adaptable to local conditions. Specialized planting bases are continuously increasing and become more mature. Long distance transportation and trade has become an inevitable trend. Large-scale base supply is gradually becoming the mainstream. The Chinese government has established green pass for transportation of agricultural products, in order to reduce and eliminate the highway tolls.

Agricultural policies by Chinese government will promote the rapid development of fresh-cut industry. Chinese government always assigns great importance to agricultural development. Especially in the No. 1 central document' released by the Central Committee of the Communist Party of China and the State Council in January 2016, Chinese government clearly pointed out that: One of the key points is to accelerate the transformation of the mode of agricultural development, make sure the stable development of agriculture, and continuous increase in rural incomes.

China is taking – at a quick pace - the road to agricultural modernization, featuring efficient outputs, safe products, resource conservation and environmental friendliness, which will promote the development of new urbanization and new countryside. In the context of such a favorable policy background, fresh-cut industry will experience a bright and fast development period!

With constant improvement of the agricultural policies in China, fresh-cut industry will achieve significant progress as China's rising industry.

In the light of these reflections, the authors' suggestion is that companies wishing to enter this market operate according to a precise decision-making and business model that includes an analysis of the market, of consumer's behavior and habits, the definition of a localized strategy, the development of proper green marketing and implementation plans.

CHAPTER 3

The new Chinese consumer - Opportunity for the Italian agri-food chain.

1. Introduction.

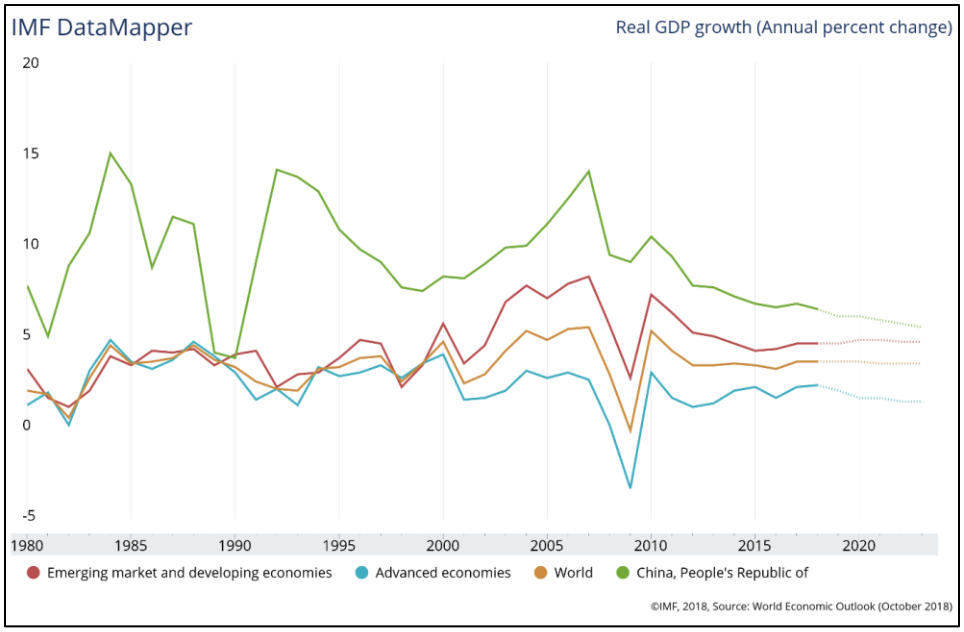
In recent years, China has shown a very rapid evolution of the consumption patterns of fresh food and beverages. Trends highlight how the Chinese consumer pays a growing focus on quality of life, well-being, food, in light of a more widespread level of well-being (growth of the middle-class).

One of the sectors that proposes new modes of consumption is, of course, the concentrated juice sector. Through the market analysis of this sector, our goal is to frame the current situation and present the scenarios of the Chinese market.

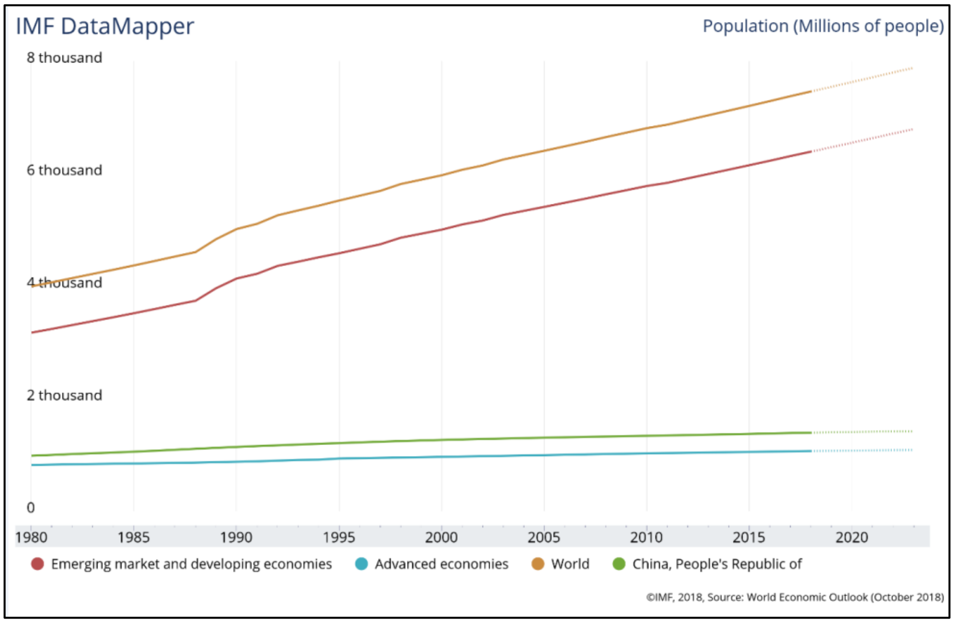
In light of our analyses we will focus on the strategic implications and business opportunities for the Italian agri-food supply chain.

2. The juice market in China - History, current situation and market trends.

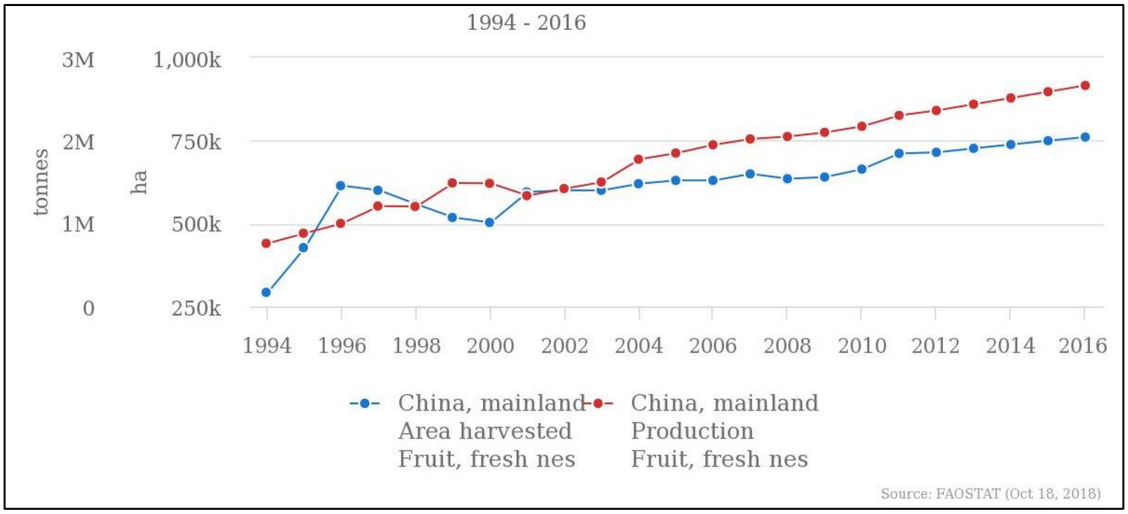
With the world's largest population, the world's second-largest economy, and relatively stable economic growth, China offers great opportunities for agri-business.



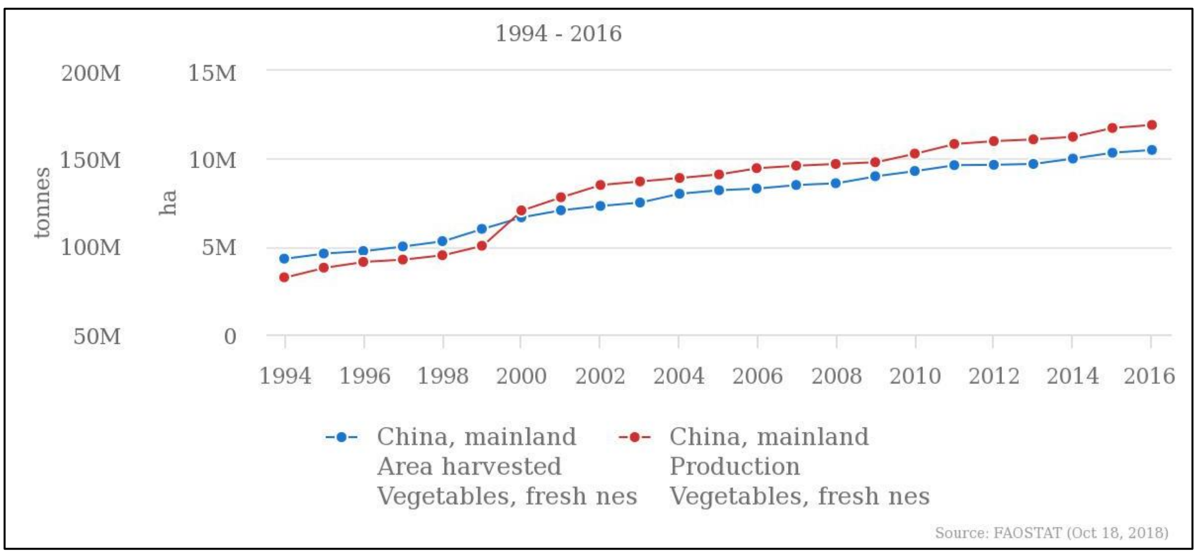
Real GDP growth – Source IMF, 2018



Population (Millions of people) – Source IMF, 2018



Production/Yield quantities of Fruit in China mainland – Source FAOSTAT, 2018

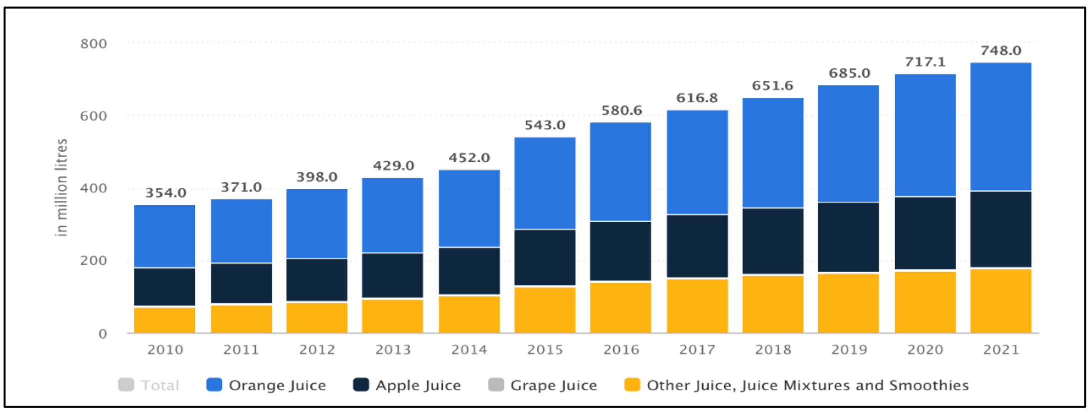


Production/Yield quantities of Vegetables in China – Source FAOSTAT, 2018

In particular, the production of the juice sector in China has grown significantly in the last five years. There are about 549 companies operating in the juice industry in China, employing 94,000 people.

Per capita consumption of juices in China - 0.44 litres - is still far from the global average. The European Union continues to be one of the world's leading consumers of fruit juices and nectar. According to the latest study conducted by the European Association of Juice Manufacturers (AIJN), per capita consumption during 2017 was 17.9 litres/per capita. However, with the rapid increase in income in China, it is expected that the juice market will see a growth trend.

According to data proposed by Statista, the size of the market in China showed an increasing trend in the period 2010-2018. Estimates tell us that the size of the market will grow to 651.6 million liters in 2018, and will reach 748 million liters in 2021. By analyzing the data, we can point out that orange juice is the most popular product variety in China.



Estimated market size and forecasts (Source: Statista, March 2018)

3. Consumption analysis

Consumption of juices in China at different times during the year.

It is interesting to check the seasonality of consumption. The analyses highlight how consumption alternates over the various months of the year/seasons:

1. From January to April, this is the period when there is an increase in the consumption of juices;

2. From May to July, due to climatic reasons, this is the golden time for the sale of juices;

3. From August to November, during this period, the consumption of juices is reduced.

3.1 Location of juice companies in China.

The supply chain of fruit juice, vegetable and beverage companies in China is thus distributed on the territory:

1: Shandong (39)

2: Shaanxi (38)

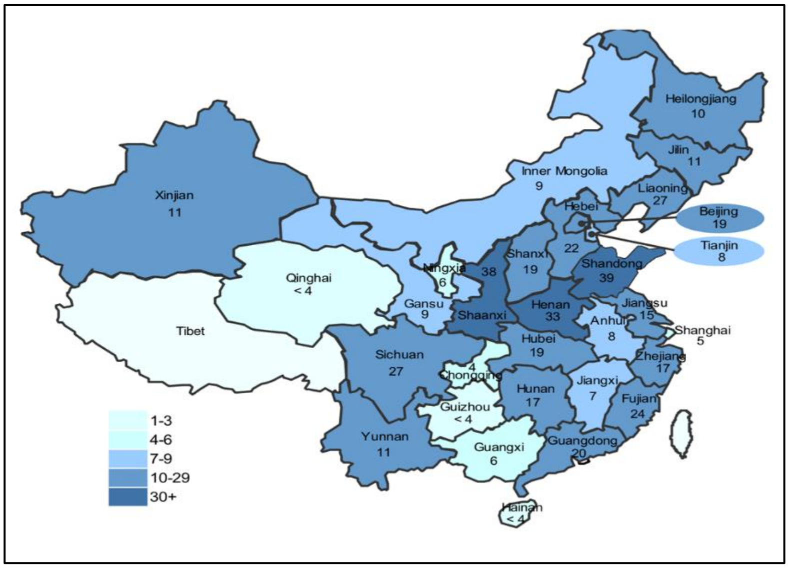
3: Henan (33)

4: Sichuan (27)

5: Fujian (24)

6: Hebei (22)

7: Guangdong (20)



Map of Chinese companies producing fruit juices, vegetable and beverage. Source: www.chinajuice.cn, 2018

3.2 The top 10 cities with the strongest purchasing power of consumers (retail sales in the first half of 2017).

The growth of the Chinese middle class and purchasing power propose a map of the top 10 cities with the strongest purchasing power of consumers (values in RMB)

1 Shanghai: 567 bln

2 Beijing: 525.7 bln

3 Guangzhou: 457.2 bln

4 Chongqing: 391.4 bln

5 Chengdu: 311.9 bln

6 Wuhan: 290.8 bln

7 Tianjin: 285.1bln

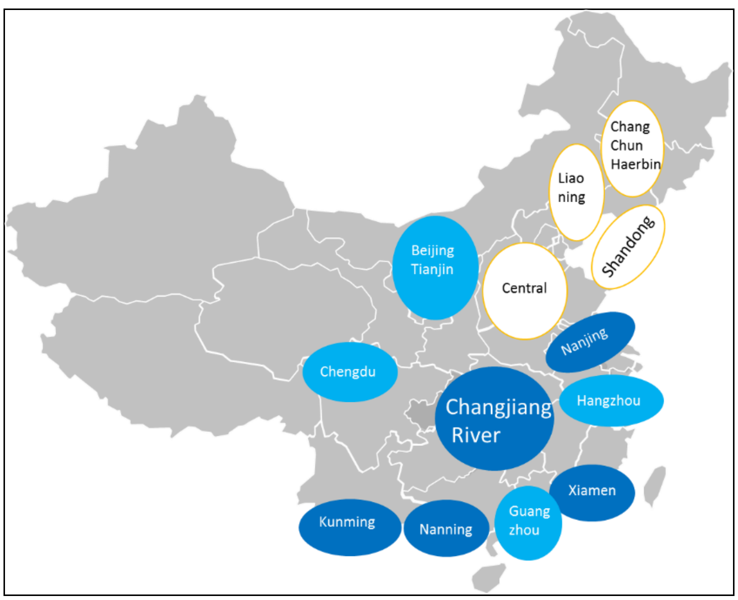
8 Shenzhen: 277.4 bln

9 Nanjing: 272.8 bln

10 Hangzhou: 267 bln

3.3 The provinces with the highest rate of income growth – Potential market for juice consumption.

The rate of household income growth will increase significantly over the next five years. The areas highlighted could be the main areas for the target business market, while family income growth rates are also different depending on the areas.



Source: www.chinajuice.cn, 2018

The main areas of juice consumption in China are located in certain geographical areas:

Coastal cities (Shanghai, Guangzhou and Tianjin); South China Sea (Fujian and Xiamen); Central China.

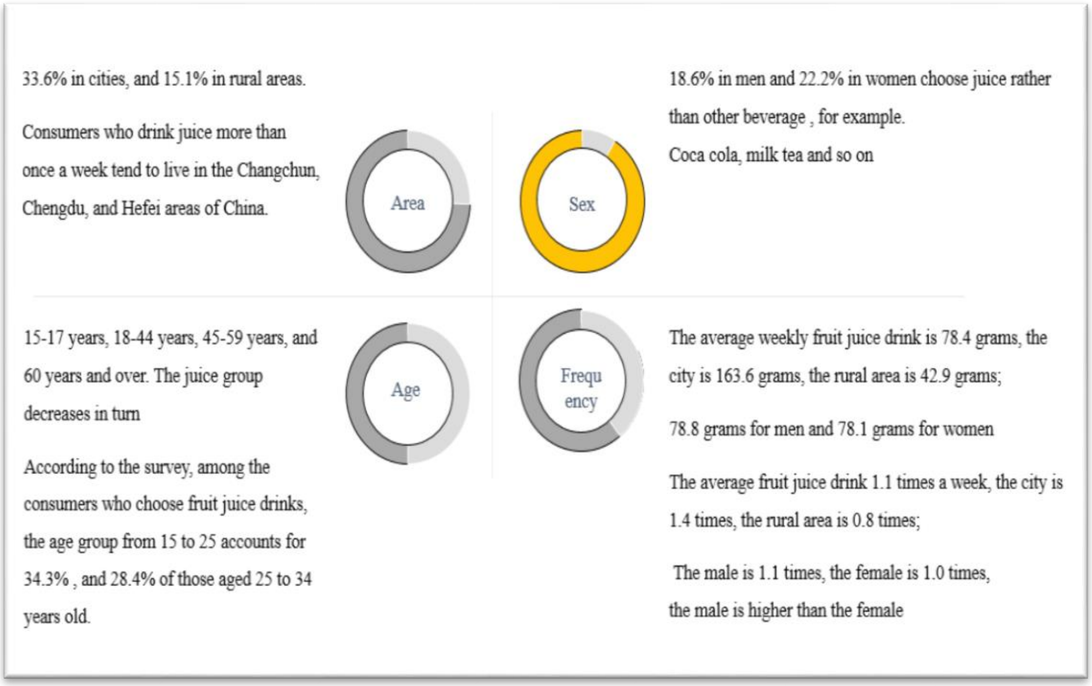
3.4 Distribution channels

The distribution in China has special features. The main ways to reach the final target are: E-commerce platform (e.g. Taobao, Tmall); Supermarket chains (e.g. RT-Mart, Metro, Carrefour, Wal-Mart, etc.); Key accounts (hotel chains, restaurants, bars, etc.); Bakeries chains, coffee shops (e.g. Starbucks, Costa, etc.); Convenience stores (e.g. Family Mart, 7-11)

4. The profile of the Chinese consumer of juices

For a company that wants to enter this market it is essential to understand the profile of the consumer. An effective marketing strategy needs to be tailored to the target consumer.

Chinese Consumer Characteristics – In the course of the research we have identified four dimensions to profile the target customer. The modes of consumption can be summarized as follows: geographical area, gender, at eth and frequency of consumption.



Author's readaptation figure – McKinsey China consumer survey, 2017 and Global Sentiment Survey, 2018.

5. Factors influencing consumption

Changes in lifestyles and socio-demographic factors significantly influence the consumption of Western foods in China. Young consumers, women, and above average income are more likely to buy Western products and are willing to pay more for fruit-based foods.

In particular, the analysis revealed three consumer segments:

- Healthy product consumers segment.

The ingredient label, nutritional content request, and brand are important attributes that determine purchasing decisions for a health-oriented segment. When targeting these consumers, food manufacturers can develop alternative recipes or technologies to increase consumer well-being.

- Premium Product Segment

Price is the most important attribute, and affects the premium product segment when buying juices. When targeting these consumers, the pricing strategy for juices can be set at 10-30% more than local prices to distinguish the product from other competitors.

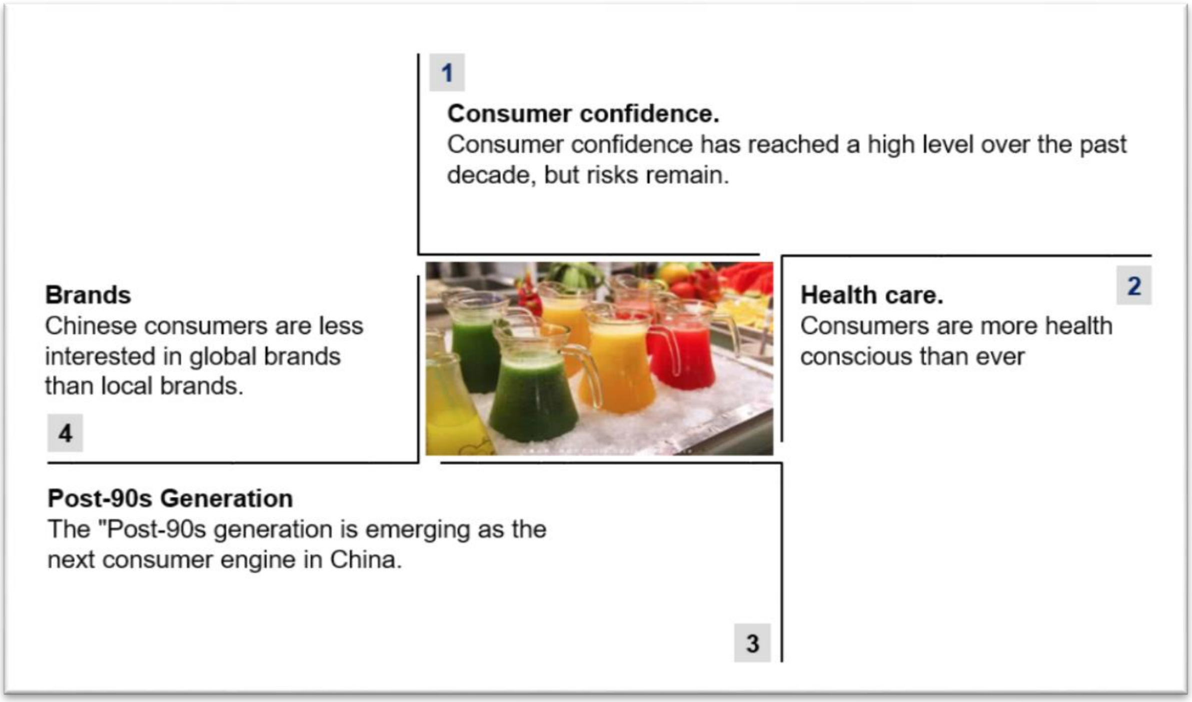
- Long shelf life 'long shelf life' segment

When juices have a longer shelf life, the lower price is a critical factor of success

6. The evolution of the Chinese consumer – analysis of patterns and behaviors of consumers

According to research conducted by McKinsey in 2018 (2018 McKinsey Global Sentiment Survey), based on the consumption of FMCG (food, soft drinks, alcoholic beverages, personal care, household products), Chinese consumers tend to choose more expensive brands compared to American and German consumers.

What emerges from this research represents the trend of consumption of the Chinese consumer:



Author's readaptation figure – McKinsey China consumer survey, 2017

- Consumer confidence

The rising cost of real estate, the need to bear high costs for children's education, and the need to support older family members, combined with a slowdown in income growth and rising prices, are casting a shadow over what is otherwise a very bright prospect for Chinese consumers.

- Attention to health

30% of Chinese adults - about 320 million people - are overweight and about 6% are obese. China today has the largest population in the world with excessive weight problems.

The government in 2016 announced the "Healthy China 2030 plan" and pledged to promote initiatives geared towards diet, exercise, and access to health services.

We are witnessing the opening of a growing number of health food stores and outlets offering "clean", "green" and 'calories-counting" products. In addition, healthy food home delivery services such as fresh-cut salads, gluten-free products and dairy products are also growing.

- Post-90s generation

They are between the ages of 17 and 27, they are "born with the Internet" and are working, earning money, and making decisions about how to spend them. Post-90, which comprises 16% of China's population, is a segment of consumers that is about to account for more than 20% of total consumption growth in China between now and 2030, higher than any other demographic segment.

- Brands

The origin of the brand is less relevant among Chinese consumers who are looking for quality, value and service. That the brand of origin counts less than before, has also highlighted a level of confusion among consumers; there is a growing ambiguity between the country of origin and the country of production.

Consumers are also willing to pay a premium price for the top of the range of foreign brands that offer functionality, design and quality. Both foreign and local brands have the opportunity to grow in China, as long as they can appeal to the increasingly nuanced needs of consumers.

7. Opportunity for Italian companies in the agri-food supply chain.

Are there opportunities for Italian companies in the agri-food supply chain? Undoubtedly. There are many excellences in our agri-business that can reap the benefits of this market. We see important potential for those companies that include strategic aspects to operate successfully in China. Among the most significant Critical Success Factors:

1. Product quality

2. Rooting the company in the territory

3. Story-telling

4. Product/Service Customization

5. Choosing local partners

6. Entrepreneur Engagement / Top Management

7. Ecommerce Channel Importance

8. Conclusions

Orange juice dominates the Chinese market. Consumers prefer the taste of orange, often combining it with other tastes, as it is believed that a mix of tastes offers greater nutritional values.

Market data show that average per capita consumption in China is still far from consumption on the European market. However, the analyses show that the juice market is expected to grow significantly until 2021.

A critical factor of success in China is distribution. The prevailing distribution channels are in fact: the retail channel, e-commerce and key accounts.

Analysis reveals that people living in the big cities of southern China tend to drink more juices.

Trends also show a propensity to recognize a premium price for high-quality products.

China is a market that provides opportunities for both local and international companies.

Interesting windows of opportunity are therefore opened for those Italian companies in the agri-food supply chain that will be able to create entry strategies on the Chinese market consistent with the profile of the consumer and with the peculiar characteristics of the China System.

To seize opportunities in China, consumer products companies need to develop strategies designed to conquer the middle-class, younger, technologically advanced users, who spread out in an expanse of small cities, which become more and more important.

Appendices:

Questionnaire to consumers

Exploring consumption of Ready To Eat (RTE) Products in China

The objective is to analyse:

• The profile of middle class Chinese consumers for the purchase of fresh-cut fruit and vegetables (cut, washed and wrapped, preserved in modified atmosphere, shelf life of 7 days)

• The measurement of the perception of these products as their quality and price attributes vary

• Extrinsic attributes (on the label) that most orient the choices

• Elements that hinder/restrict the purchase or proof of such products

• Measure the level of awareness of such products

• Access to products (perception)

To whom to submit the questionnaire:

• Consumers of all metropolitan city bands

• Consumers of all TIER 1 city tiers, 2...

Questionnaire on fresh cut (or ready to eat) products

Dear Madam/Sir

We are university researchers and we are conducting a research on the consumption habits of fresh-cut products.

According to the FAO (Food and Agriculture Organization of the United Nations) fresh-cut products are fruits or vegetables that have been trimmed, peeled and/or cut into a fully usable product, which is subsequently packaged to offer consumers high nutrition, convenience and flavour while maintaining freshness.

Our research aims at understanding consumer interest in these products and evaluating the potentialities of the Chinese market.

Your opinion will be therefore very important and we thank you for the contribution you give us.

Any information you provide will be anonymous and treated with the utmost confidentiality.


Farmer-Mix

Intro question

Please be aware that this questionnaire is anonymous, no personal information will be shared to any third part, the survey is conducted only for research purposes, and data will be distributed in an aggregate way. Do you agree to complete the survey?

Yes

No

Screening and socio-demographic questions:

1. What is your nationality?
    - ☐ Chinese
    - ☐ European / Soviet Union
    - ☐ North American
    - ☐ South American

- African
- Middle east
- Asia
- Australia/Pacific
- NA

2. What is your gender?
   - M
   - F

3. Please indicate your age range. Age range of the respondent:
   - < 20
   - 20 – 25
   - 26 – 30
   - 31 - 35
   - 36 – 4041-45 46-50
   - 51-55
   - 56 -60
   - > 60
   - NA

2. What is your highest level of completed education?
   - Primary school
   - Secondary school
   - College
   - University

- ☐ PhD/Master…
- ☐ NA

3. Can you please indicate your houseold monthly income range?
   - ☐ Less than 10,000 rmb per month
   - ☐ Between 10,001 and 15,000 rmb
   - ☐ Between 15,001 and 20,000 rmb
   - ☐ Between 20,001 and 25,000 rmb
   - ☐ Between 25,001 and 30,000 rmb
   - ☐ Between 30,001 and 35,000 rmb
   - ☐ Between 35,001 and 40,000 rmb
   - ☐ Between 40,001 and 45,000 rmb
   - ☐ Between 45,001 and 50,000 rmb
   - ☐ Above 50,000 rmb

4. Where do you currently live and work?

   Free answer

5. The city you indicated in question n.4, is the same of the city where you have your hukou?
   - ☐ Yes
   - ☐ No, my hukou is.......... (indicate location)

6. Which category better describes your current working position? Multiple options allowed
   - ☐ Government companies / organizations

- ☐ Private organizations
- ☐ Free lance
- ☐ Entry level
- ☐ Mid-senior level
- ☐ Managerial role
- ☐ Freelancer
- ☐ Student
- ☐ Retired
- ☐ Not employed / housewife
- ☐ Part-time worker

7. Are you responsible for the food purchases?
   - ☐ Yes
   - ☐ No

8. How many people live in your household?
   - ☐ 1
   - ☐ 2
   - ☐ 3
   - ☐ 4
   - ☐ More than 4

9. How many children under 3 years?
   - ☐ 0
   - ☐ 1
   - ☐ 2

- More than 2

10. How many people are currently working in your household?
    - 0
    - 1
    - 2
    - More than 2

11. How do you spend your free time?
    - Fitness
    - Concerts and shows
    - KTV
    - Training courses
    - Reading
    - Other, please indicate

Awareness of ready to eat fruit/vegetable/salad product (RTE = Ready To Eat)

12. Please indicate if the following statements are ture or false focus group
    - RTE products must be washed before being consumed
    - Can be consumed directly
    - Are treated more than the fresh alternative
    - Are more healthy than the cool ones
    - Are industrial products very far from the quality of the fresh produce
    - Are more controlled and selected than the cool
    - ….

Consumption habits

RTE fruits

13. Have you ever purchased fruits that has been cut and packaged?

- ☐ Yes
- ☐ No

14. How many portions of fruits do you eat per day?

- ☐ Never
- ☐ Not everyday
- ☐ Once a day
- ☐ Two times per-day
- ☐ Three times per day
- ☐ Four times per day
- ☐ Five times per day
- ☐ More than five times per day

15. What percentage of this is cut and packaged?

- ☐ Enter % from 0 to 100

RTE vegetables

16. Have you ever purchased vegetables that has been cut and packaged?

- [ ] Yes
- [ ] No

17. How many portions of vegetables do you eat per day?

- [ ] Never
- [ ] Not everyday
- [ ] Once a day
- [ ] Two times per-day
- [ ] Three times per day
- [ ] Four times per day
- [ ] Five times per day
- [ ] More than five times per day

18. What percentage of this is cut and packaged?

- [ ] Enter % from 0 to 100

19. How often do you eat vegetables?

- [ ] Never
- [ ] Not everyday
- [ ] Once a day
- [ ] Two times per-day
- [ ] Three times per day
- [ ] Four times per day
- [ ] Five times per day

- More than five times per day

20. What percentage of this is cut and packaged?
    - Enter % from 0 to 100

<u>RTE salads</u>

21. Have you ever purchased salads that has been cut and packaged?
    - Yes
    - No

22. How many portions of salads do you eat per day?
    - Never
    - Not everyday
    - Once a day
    - Two times per-day
    - Three times per day
    - Four times per day
    - Five times per day
    - More than five times per day

23. What percentage of this is cut and packaged?
    - Enter % from 0 to 100

24. How often do you eat salads?

- Never
- Not everyday
- Once a day
- Two times per-day
- Three times per day
- Four times per day
- Five times per day
- More than five times per day

25. What percentage of this is cut and packaged?
    - Enter % from 0 to 100

General

26. Do you regularly consume (about 3 times per week) the following products? You can indicate more options.
    - RTE salads
    - Packaged salads
    - Fresh cut mixed fruits
    - Fresh cut single fruit item (if yes please specify)
    - Packaged tomatoes
    - Packaged carrots
    - Other, please specify

27. Do you purchase these products for immediate consumption?
    - Yes

- No, but I will consume the products within a day
- No, I will consume the products within two or three days

28. How did you learn about these products?

- Use it friends/relatives/colleagues
- I saw it in the distribution
- Advertising
- I did try it at the outlets
- Traveling in other countries
- Internet/social media/search engines
- Other…

29. Where do you usually buy fresh products?

- Market
- Supermarket
- 7 eleven/Family Mart ..... chains
- Online
- Vending machine
- Other….

30. Where do you usually buy the cut and packaged products?

- Market
- Supermarket
- 7 eleven/Family Mart ..... chains

- Online
- Vending machine
- Other….

31. When do you consume RTE products? (multiple options allowed)
    - Snacking
    - Lunch box at work
    - Regular meals
    - Others, please indicate

32. You consume RTE products… (always = 4, never = 1)
    - Just by myself
    - Share with colleagues
    - Share with friends
    - Share with family

Factors affecting consumption

33. Indicate why you do not buy often or never bought fruit vegetables and salad cut and packaged (indicate even more than one possibility)..focus group
    - Price too high
    - I do not know these products
    - I do not trust these products
    - I do not know where to buy them
    - The available products do not correspond to what I would like
    - Are not available in the area of my residence

- The expiry date is too close
- ….

34. What is your family's opinion about cut and packaged products?

- Extremely negative
- Negative
- Indifferent
- Positive
- Enthusiastic

35. What is your friends ' opinion about cut and packaged products?

- Extremely negative
- Negative
- Indifferent
- Positive
- Enthusiastic

36. What is the opinion of your working/study colleagues on cut and packaged products?

- Extremely negative
- Negative
- Indifferent
- Positive
- Enthusiastic

37. What is the opinion on social media about cut and packaged products?

- Extremely negative
- Negative
- Indifferent
- Positive
- Enthusiastic

38. How important is what my family thinks about the cut and packaged products in my decision on what to buy?
    - Extremely important
    - Relevant
    - Indifferent

39. How important is what my friends think about the cut and packaged products in my decision on what to buy?
    - Extremely important
    - Relevant
    - Indifferent

40. How important is what my work/study colleagues think about the cut and packaged products in my decision on what to buy?
    - Extremely important
    - Relevant
    - Indifferent

41. How important is what is told on the social media about the cut and packaged products in my decision on what to buy?

- ☐ Extremely important
- ☐ Relevant
- ☐ Indifferent

Quality attributes

42. In your opinion which of the following characteristics is more important or less important for ready to use salad/fruit/vegetables rather than fresh produce?

	Not important at all	**Less important**	**Indifferent**	**Important**	**Very important**
Product Appearance-Freshness	☐	☐	☐	☐	☐
Origin	☐	☐	☐	☐	☐
Brand	☐	☐	☐	☐	☐
Organic	☐	☐	☐	☐	☐
Time saving	☐	☐	☐	☐	☐
Competitive price	☐	☐	☐	☐	☐
Extended Expiration Date	☐	☐	☐	☐	☐
Possibility to have indications on the	☐	☐	☐	☐	☐

packaging about environmental certifications					
Availability of nutritional information on the packaging	☐	☐	☐	☐	☐

43. On a weekly bases, could you please tell us the types of products you buy?

44. On a weekly basis, considering all the RTE products (fruit, salads, vegetables), for your household how much are you willing to pay in total?
    - ☐ I am not interested to buy RTE products
    - ☐ Less than 50 rmb per week
    - ☐ Between 50 and 100 rmb per week
    - ☐ Between 101 and 150 rmb per week
    - ☐ Between 151 and 200 rmb per week
    - ☐ Between 201 and 250 rmb per week
    - ☐ Between 251 and 300 rmb per week
    - ☐ Between 301 and 350 rmb per week
    - ☐ Between 351 and 400 rmb per week
    - ☐ Between 401 and 450 rmb per week
    - ☐ Between 451 and 500 rmb per week
    - ☐ Above 501 rmb per week

45. Do you remember when did you buy the last RTE product?

46. Do you remember how much did you pay?

47. Do you remember what did you buy?

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