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CONSUMER ATTITUDES AND BEHAVIOUR TOWARDS HONEY IN CHINA

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Abbreviations list

Abbreviation	Full Name
DS	Dietary Supplements
FAO	Food and Agriculture Organization
FTS	Food Traceability System
GDP	Gross Domestic Product
GM	Genetically Modified
HACCP	Hazard Analysis Critical Control Point
HHI	Herfindahl Hirschman Index
PBC	Perceived Behavior Control
RMB	Renminbi
SB	Subjective Norms
SD	Standard Deviation
TPB	Theory of Planned Behavior
UHT	Ultra-high Temperature
USD	United States Dollar
WHO	World Health Organization
WTP	Willingness To Pay

Abstract

As the largest honey producer and exporter, China has witnessed a rapidly growing demand of honey in the domestic market. However, there were few research studies addressing the market potential. This study aimed to understand Chinese honey consumers by exploring their purchase and consumption behaviour, knowledge, familiarity with the honey label and beekeeping. Another objective of the research was to examine how consumers respond to Chinese-brand honey, honey from local bee keepers and honey imported from European Union (EU) as well as to identify factors influencing their purchase intention. Consumer segmentation based on honey usage amount were identified and profiled as well. Data was collected through a quantitative online survey in Tonglu County, Hangzhou, China (n=376). Statistical analysis included descriptive analysis, general linear regression analysis, and non-parametric tests. Consumers' purchase habits were described in terms of purchase locations, types and frequencies. The consumption pattern was described based on their consumption quantity, frequencies and purposes. Consumers' subjective knowledge was higher than objective knowledge. Half of the participants had seen the Chinese honey label but they did not understand the label completely. And a majority was familiar with bee keeping. Honey from local bee keeper had the most positive image among consumers, followed by Chinese-brand honey, and then by EU honey. The main predictors of various types of honey purchase intentions were attitudes, perceived behaviour control, subjective norms, health consciousness, trust and awareness of possible issues. Finally, light (35.4%), medium (29.3%) and heavy (35.4%) users were the three segments identified in this study. Heavy users had a more positive image and higher purchase intention of EU honey. These results yield recommendations for public interventions and private marketing strategy development.

Key words: Honey, Beekeeping, Consumer Behaviour, Consumption, Label, Purchase Intention, China

Chapter 1: Introduction

Honey has played an important role in the history of human diet. It delivers various health benefits to the human body and provides the pollination services to agriculture sectors. In the global market, China is the biggest producer and exporter based on FAO data. However, the growing trend of honey consumption in China might be neglected under its huge production and export amount. There are evidences suggesting an increasing demand of both domestic and imported honey. Hence, the primary purpose of this thesis is to explore the behaviour pattern and dynamics of Chinese consumer, so that this study could provide useful suggestions for domestic honey industry and policy makers. Moreover, studying the preferences of Chinese consumers would also shed light in honey exporters who wish to step into the great honey market in China.

1.1 The benefits of consuming honey

According to Codex Alimentarius, established by FAO and WHO as a set of voluntary international food standards, honey is “the natural sweet substance produced by honey bees from the nectar of plants or from secretions of living parts of plants or excretions of plant sucking insects on the living parts of plants, which the bees collect, transform by combining with specific substances of their own, deposit, dehydrate, store and leave in the honey comb to ripen and mature” (FAO, 1987). Honey is also said to be the first and the oldest sweetmeat used by human being (M.Ghorbani & Khajehroshanaee, 2009). In general, consuming honey would bring diverse benefits.

Above all, honey is a great source of energy. Its dry matters are largely constituted by carbohydrates, mainly fructose and glucose. And there are in total 25 saccharides (Bogdanov, Jurendic, Sieber, & Gallmann, 2008). As an important source of energy, honey played a significant role in Homo sapiens’ diet since their beginning. Some anthropologists claimed that honey might provide critical energy in enlarging hominin brain and enable them out-compete other species (Crittenden, 2011).

Apart from carbohydrates, honey also contains proteins, enzymes, polyphenols minerals, amino acids, trace elements, vitamins, and aroma compounds. It has been proven that honey possesses antimicrobial, antiviral, antioxidant, anti-mutagenic, anti-tumour, anti-parasitic, and anti-inflammatory effects, which are potentially beneficiary

for the human health. According to nutritionists, a higher doses intake of honey would bring a variety of positive nutritional and health effects (Bogdanov., 2008). For example, the jujube honey, which is one of the most widely consumed honeys in China, has been proved its antioxidant and protective effects on alcohol-induced liver damage of mice (Cheng., 2014). Another example revealed the great potential of Malaysian honey in controlling obesity (Samat, Kanyan Enchang, Nor Hussein, & Wan Ismail, 2017).

On the other hand, honey is the by-product of honeybee's plants pollination. Honey consumption therefore partially compensate for the pollination services. Hence, promoting honey among consumers is very beneficiary not only to the honey industry but also domestic agricultural sector. And the economic viability of the honey market is essential for stable pollination services provided by honeybee colonies. In this sense, efforts to stimulate honey demand clearly generate values far beyond the product itself since the pollination cost would be much higher without honey production. In the United States, for example, the federal government subsidized the honey industry for its unique value for agricultural sectors (Ward & Boynton, 2010).

1.2 Honey production in China

The production, consumption, import and export of honey vary among different country. The FAO has pictured the world honey production distribution from the average production density (Figure 1) to the average production shares among different continents (Figure 2). The top 10 honey production countries, according to FAO, are China, Turkey, Argentina, the United States, Ukraine, Mexico, Russia, India, Iran and Ethiopia (Figure 3). Particularly, China, as the largest honey producer in the world, plays a significant role in the world honey market (Guoda & Chun, 2003). For instance, one European article pointed out that Europe could not satisfy its growing demand of honey without China (Tamma, 2017). Although China mainly exports honey as raw material like other developing countries; while developed countries export honey as packaged products (CBPA (China Bee Products Association), 2013)

Annual honey production was growing steadily while the export fluctuated in the past years in China. Figure 4 indicated a growing trend of annual honey production. From 2000 to 2002, the amount of honey exported dropped sharply. This could be explained by the fact that Chinese honey was banned or heavily taxed by many countries since

2000 when adulteration, impurities and pollution of heavy metal and antibiotics had been reported (S. Wu, Fooks, Messer, & Delaney, 2015). After 2004, however, the exporting amount was again increasing slowly but steadily, because the ban was lifted shortly.

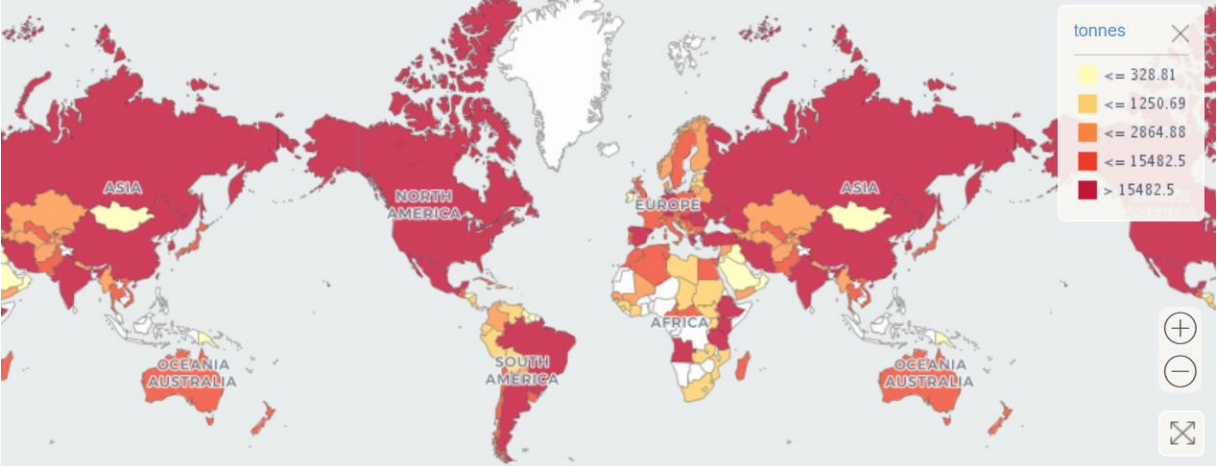


Figure 1: Global honey production density, total average from 2001 to 2016, data source: FAO

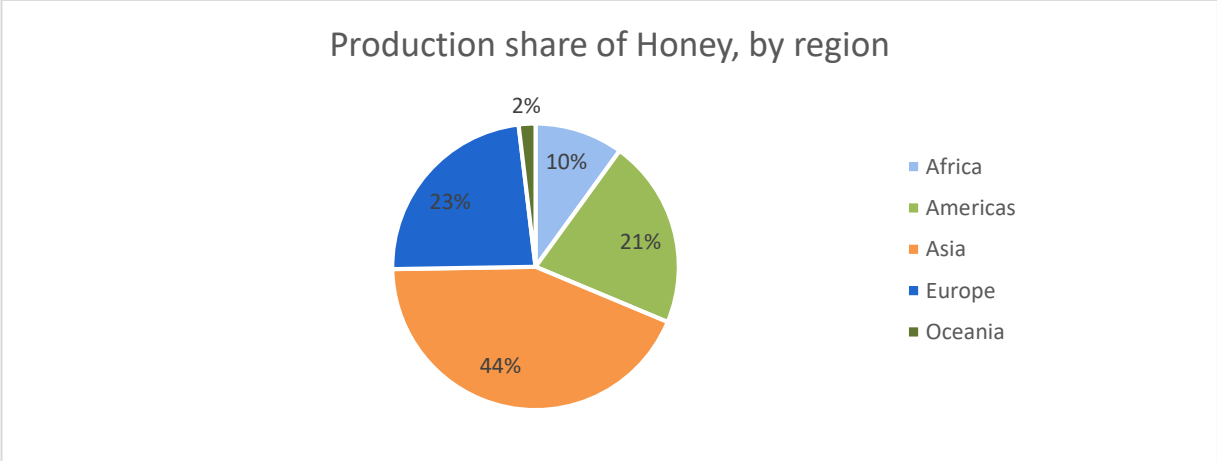


Figure 2: Global production share of honey by region, total average from 2001 to 2016, data source FAO

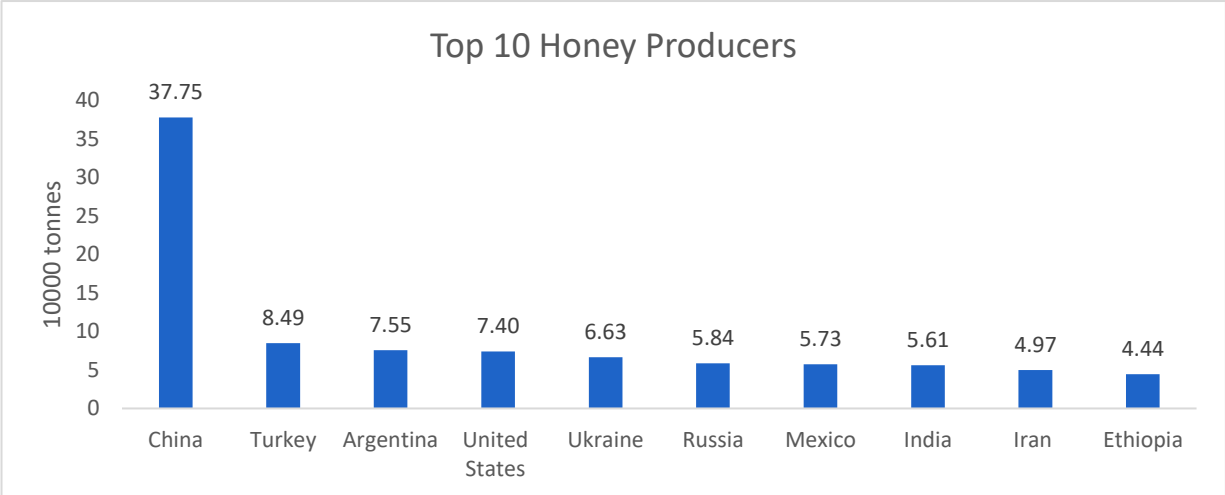


Figure 3: top 10 average honey production countries, total average from 2001 to 2016, data sources: FAO

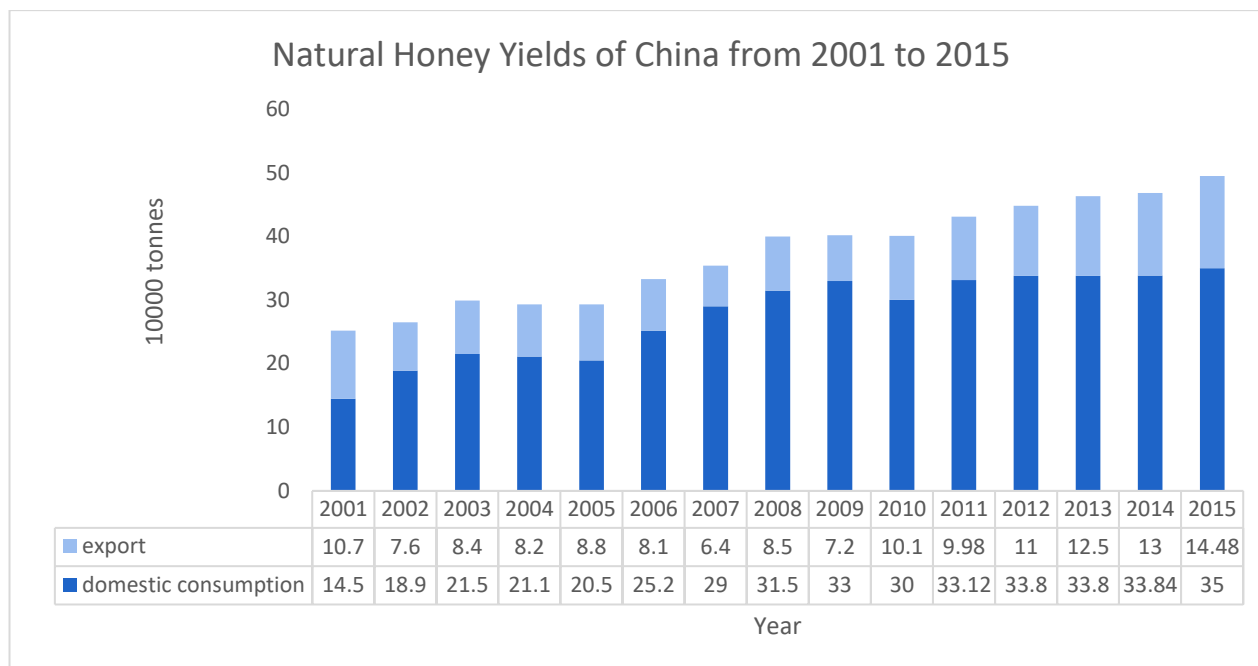


Figure 4: Annual Natural Honey Yields, export and domestic consumption in China, Data source: National bureau of statistics of China

1.3 Honey consumption in China

Domestic consumption has a fast-growing trend which is quite clear from Figure 4. Such trend was captured by a comprehensive report of China Bee Products Association as well. In this report, it was emphasized that China has become the largest honey consumption country in the world. Since 2008, the domestic consumption amount of honey is larger than three quarters of its annual yield. Some researchers also reported the growth rate of raw honey consumption in China is 5-10% a year (Zheng, Wei, & Hu, 2011). Increased income, health-awareness and products diversification are reasons contributing to the growing demand. From the perspective of honey consumption per capita, it has increased from 0.11 kg per capita in 2001 to 0.3 kg per capita in 2012 (CBPA (China Bee Products Association), 2013). Compared with developed countries, however, it is still a small figure that has a big potential to increase. For instance, the annual honey consumptions in Germany, Austria, Switzerland range from 1 to 1.8 kg per capita (Bogdanov., 2008).

Noticeably, the quantity of imported honey is increasing as well (Figure 5). According to the white paper, it is a result of the growing preference to honey produced in foreign countries. The prices of imported honey are three to ten times of domestic honey, sometimes even higher. Nevertheless, high price does not guarantee high quality. There were cases of adulteration or contamination in imported honey as well, which

were reported by Entry-Exit Inspection and Quarantine Bureau in recent years (CBPA (China Bee Products Association), 2013; Sun, Xueting; Li, 2017). Given increased demand and preference towards imported honey, the Ministry of Agriculture and other departments organized 2017 World Honey & Bee Products Show in Beijing¹ and will continue organizing the event in 2018². It provided a platform for honey producers from China and abroad to exhibit their products.

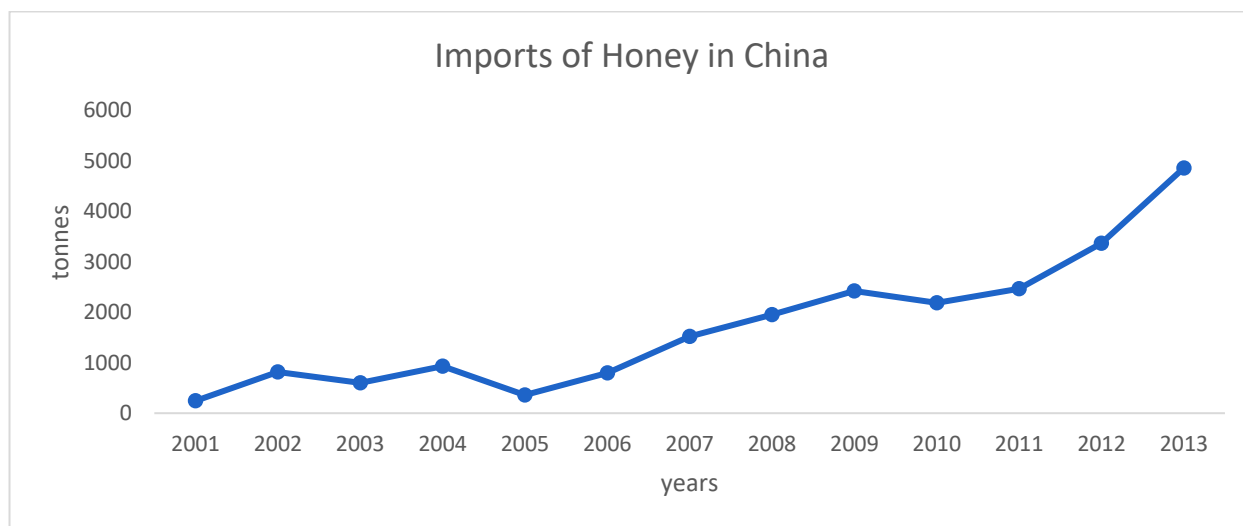


Figure 5: Imports of honey in China from 2001 to 2013, data source: FAO

The price of honey is growing as well, which was captured in the price research of honey. Researchers studied honey markets in several cities from 2012 to 2015 and have observed a growing price of honey as well as a growing demand of honey products. The average honey price grew from 55.6 to 79.8 RMB per kilogram from 2012 to 2015. They explained such trend as a result of rising costs and higher income and health-awareness of consumers (Gao & Zhijun Chao, 2016).

1.4 Research objectives and questions

The primary objective of the thesis was to explore the honey purchase and consumption behaviour of Chinese consumers. Where do they purchase? What types of honey do they purchase? How often do they consume honey? These are the detailed questions included in the first objective. It would be also interesting to see how consumers respond to Chinese-brand honey, honey imported from local bee keeper, and honey imported from EU. Therefore, the second objective was to compare the image profiles of different types of honey. Further, consumer knowledge

¹ The details of the event could be found in <http://www.chinaagtradefair.com/2017WorldHoneyshow.pdf>

² The official website of the 2018 event is <http://www.chinaagtradefair.com/honeybeeshow.html>

about honey, familiarity with honey label and bee keeping were discussed. It was found that Chinese consumers tended to have limited knowledge in terms of food. And the label was developed by China Bee Product Association in recent years. To the knowledge of the author, it has not been studied in a scientific report before. Thirdly, the key determinants that explain purchase intention towards honey were identified in this thesis. Lastly, the thesis aimed at classifying consumers into groups by their honey usage. A thorough understanding of Chinese honey consumers would benefit both public and private sectors related with honey. Hence, the following research questions were formed:

- (1) What are the honey purchase and consumption patterns among Chinese consumers?
- (2) What are the images of Chinese-brand honey, honey from local bee keeper, honey imported from EU perceived by consumers?
- (3) To what extent are consumers knowledgeable about honey familiar with honey label and with bee keeping?
- (4) What are the determinants that shape the purchase intentions towards, honey, Chinese-brand honey, honey from local bee keeper, honey imported from EU?
- (5) What are the characteristics of different consumer segments based on their amount of honey usage?

1.5 Justification

First of all, answers to these questions would shed light on business decisions. The growing demand of honey indicates a great commercial opportunity that should not be neglected by both domestic honey companies. On the other hand, China reduced its honey tariff from 15% to 9%. And since 1st Jan of 2017, claimed by the Customs, the honey product tariff was further reduced to 6%. The increasing demand and tariff reduction signified a great opportunity for foreign honey producers. Thereby, understanding needs and habits of Chinese consumers were extremely important for them to seize the opportunity.

Secondly, exploring the attitudes and behaviour of consumers would provide useful suggestions for policy makers. Given the minor role of beekeeping in domestic agriculture sector, the government did not pay sufficient policy attention to it (Gao & Zhijun Chao, 2016). This is not the case in developed countries like the United States

that developed a variety of programs to support its bee keeping (Ward & Boynton, 2010). The previous introduction stated the benefits of higher honey consumption in agriculture development. In reality, scientists urged the growing needs of pollination services provided by honey bees. Therefore, supporting beekeeping should be incorporated into future policies.

Chapter 2: Literature review

The literature review first collected different honey consumer studies around the world. The research methods used by the researchers include experimental auction, choice modelling, econometric models, focus group, conjoint analysis, cluster analysis and in-depth interview. They either portrayed an ideal honey profile for consumers in certain region, or identified the factors influencing the purchase decision, or clustered the consumers into different groups and so on. In all, most of them tended to focus on how specific honey traits impact on consumers and classify them into different segments. Additionally, there is a concentration of honey consumer study in Europe probably due to the high consumption of honey in Europe. African, American and Asian honey consumers' purchase behaviour remained largely unaddressed.

On the other hand, it's necessary to review Chinese consumers studies in terms of food purchase. Their findings could be summarized as the following points: (i) Food safety is a hot topic and also a top concern of Chinese food consumers, however, their knowledge is limited; (ii) Food labels, traceability was frequently discussed in recent researches. Information from authorities such as government and doctors receive high trust while that from media and marketer might face distrust.

2.1 Honey consumer studies

2.1.1 Honey consumer studies in Europe

Irish honey consumption pattern was investigated by the methodology of conjoint analysis. In Ireland, the ideal honey profile identified by the paper, was one with dark golden colour, thick texture, made by small producers, and in a plain glass jar. Apart from that, three distinct segments were identified which created the basis of precise marketing strategy (Murphy, Cowan, O'Reilly, & Henschion, 2000).

The Italian consumers' honey purchase behaviour was analysed to isolate the determining factors of purchase intentions. They interviewed Italian consumers face to face, the data of which was analysed by latent class model. The results of the model classified consumers into different segments with heterogeneous preferences. In addition, they also suggested that the country of origin, organic attributes were important factors to influence purchasing behaviours (Cosmina, Gallenti, Marangon, & Troiano, 2016).

In Romania, a group of researchers explored the honey consumption and purchase mode. The methodology of this research includes personal interviews and cluster analysis. The Romanian consumers have the feature of paying low attention to labels and having low awareness of honey energy content. In contrast, Romanian consumers tend to trust physical properties of the honey more such as aroma, color, taste and texture. (Arvqnitoyannis & Krystallis, 2010). Another research also has a focus on Romania honey consumption pattern proclaimed that high honey consumption frequency was associated with a medium to high income level and social status (Pocol, 2011).

Likewise, honey consumer study was also conducted in Hungary. This study was driven by low domestic consumption and low awareness of honey among consumers in Hungary despite high production. According to the results, quality of honey and packaging, price and type of honey were most crucial criteria when Hungarian consumers were purchasing honey (Ványi, Csapó, & Kárpáti, 2011).

Researchers in Czech have done a marketing analysis of consumer behavior when purchasing honey. They interviewed consumers with regards to honey attributes such as price, origin, honey type, crystallized sugar and organic quality. Conjoint analysis verified that Czech consumers were primarily interested in the price and origin of honey. Crystallization feature also affected their perception of quality (Šánová, Svobodová, Hrubcová, & Šeráková, 2017).

2.1.2 Honey consumer studies in the Middle East

Two researches have been done in Saudi Arabia. The first investigated in major factors that affected honey consumption patterns in Saudi Arabia. In this research, qualitative, quantitative methods and econometric models have been employed to analyse the data and predict the future number of consumers. Taste, aroma, physical state, honey source, brand name, and confidence in the producers were found to be the determining factors impacting on honey consumption. Moreover, medication, food and sweetening were isolated as the major motivations for honey consumption (Ismail, Kahtani, Adgaba, Al-ghamdi, & Zulail, 2014). The second concentrated on the factors that have impact on retail marketing of honey in Saudi Arabia. Cross sectional survey was used in direct interview with retail outlets in seven major cities in Saudi Arabia. Some indexes, including market share, Gini coefficient and Herfindahl Hirschman Index (HHI), were used to estimate the market structure. According to the

results, the honey retail market was closer to pure competition with relatively small concentrations in certain regions. It was also concluded that low quality, lack of marketing services, the consumers' poor knowledge of honey and so forth were major problems facing the honey retailers in Saudi Arabia (Al-Ghamdi, Zulail, & Adgaba, 2014).

In order to evaluate the impact of qualitative factors of honey on consumer demand in Iran, Hedonic Pricing Model and a cross section data of 360 consumers were employed in one research. The results suggested that packing, color, scent; wax content, and sweetness of honey mattered. Therefore, the honey market in Iran was suggested to producing honey without wax, with proper packing, dark color, good scent, less sweetness (M.Ghorbani & Khajehroshanaee, 2009).

2.1.3 Honey consumer studies in Asia-Pacific

In Western Australia, honey industry possesses many positive advantages yet the honey sales were static. To foster consumption, a clearer understanding of honey purchase behaviour in Western Australia was necessary. A group of Australian and Chinese researchers explored factors that influence on consumers' decision on honey purchasing in retail stores. Some principal factors were isolated with exploratory factor analysis. The results revealed that brand reputation, origin and monetary value were most influential factors in purchase decision. They also classified five distinct segments among honey consumers in Western Australia (Peter J. Batt & Liu, 2012).

Some other researchers studied the factors that influence Asian consumers' preferences of honey-related products such as bee pollen, royal jelly and honey drinks. The results indicated that medical conditions, quality of the product, brand reputation and pricing had a positive and significant relationship with Asian consumers' purchasing intentions (Ho Chiang Yeow, Tee Suan Chin, Ai Yeow, & Sin Tan, 2013).

2.1.4 Honey consumer studies in America

The study of the United States honey consumer behaviour has a specific focus on the issue that how increasing media messages would influence on honey consumers. Through auction experiments and regression analysis, they found that honey demand in the US varied according to the production location, packaging and the information about the product. Moreover, consumers presented greater demand for local honey

especially when they were informed of the negative aspects of international honey like adulteration and pollution by media (Wu., 2015).

2.2 Chinese consumers in terms of food

2.2.1 High concerns, limited knowledge over food safety

Food safety has been topical in food consumer studies. Under the context of frequent food contamination scandals, Chinese consumers express serious concerns over food scares. Food safety was the top concern for Chinese consumers in terms of healthy drinks, for instance (Lee, Lusk, Miroso, & Oey, 2014). One survey found that around 83% of the respondents had a high level of worry and perception of risk about food hazards (Liu, Pieniak, & Verbeke, 2014). Families with children are likely to show higher concerns over food safety. The melamine contamination of milk in 2008, for example, had greatly plummeted milk consumption among households, particularly those with young children. However, most Chinese consumers had little knowledge of the Food Safety Law that actually went into effect three months ago (Qiao, Guo, & Klein, 2010, 2012).

Nevertheless, their knowledge over food safety issue is limited. A literature review paper evaluated Chinese consumers' decision-making process regarding to safe food. And they indicated Chinese consumers possess high awareness but low knowledge of safe food, and they have low recognition of labels. Hence, Chinese consumers have limited ability identifying safe food (Liu, Pieniak, & Verbeke, 2013). Their conclusion was in line with many other papers. A survey in Beijing food consumers concluded that less than 20% of the respondents were aware of HACCP, a management system aiming at reducing food safety risks. After receiving information of HACCP, all respondents were willing to pay extra price for HACCP-certified products (Wang, Mao, & Gale, 2008).

2.2.2 Different information sources lead to trust or distrust

Labels, certificates, traceability and other systems are direct information sources.

Consumers with adequate information are inclined to pay premiere price for labelled products. In the case of newly developed seafood label, Chinese consumers considered is as an important information source and were willing to pay more for the labelled seafood for the benefits of themselves and society (Xu, Zeng, Fong, Lone, & Liu, 2012). Food traceability system (FTS), as another example, was established after

the tainted milk scandal in 2008. When consumers were well informed about FTS, the acceptance level significantly increased (L. Wu, Xu, & Gao, 2011).

Authorized information enjoys solid trust from consumers. For instance, certificates issued by government received more trust. Since consumers had highest value towards government certification with respect to ultra-high temperature (UHT) milk, it would be beneficiary the government put more effort on food safety supervision claimed by one research (Ortega, Wang, Wu, & Olynk, 2011). Other authorities such as medical doctors usually receives consumers high trust from consumers (Liu et al., 2014).

Marketers and media, however, might face distrust. For products like soy-based dietary supplements (DS), marketer distrust was proven to play an important role in influencing attitudes and purchase intentions (Chung, Stoel, Xu, & Ren, 2012). Besides, media might influence consumers in negative way. Negative information from media on genetically modified (GM) soybean oil would significantly reduce consumers' WTP in China (Hu, Zhong, & Ding, 2006).

Chapter 3: Methodology

Theory of Planned Behaviour (TPB) would be employed in this research, because it is a powerful social behaviour model revealing complex behaviour dynamics. It has the advantage of unveiling the complicated decision process. Apart from the TPB, some additional variables such as health consciousness, trust, awareness of possible issues with honey, subjective and objective knowledge were added. Hence, an extended TPB framework was constructed. The next step is to build a questionnaire to measure the latent variables in extended TPB framework. In addition, honey purchase and consumption pattern, honey label, different honey images and familiarity with bee keeping were included in the questionnaire. The survey was done in Tonglu County. And data was mainly analysed in SPSS 24.0.

3.1 Theoretical framework

3.1.1 Theory of planned behaviour

Since the introduction of TPB in 1985, it has been developed as an influential human social behaviour model and applied in various research topics (Ajzen, 2011). In general, the idea of TPB is that intentions of different behaviours could be predicted highly accurately by attitudes toward the behaviours, subjective norms and perceived behavioural control. Intentions are indications of how much effort people are willing to exert on performing the behaviour. There are three determinants of intentions. The first one is the attitude which means whether people hold a favourable or unfavourable appraisal toward the behaviour. The second one is subjective norms, referring to the social pressure people perceived to perform the behaviour or not. Thirdly, the perception of behaviour control refers to people's perception of performing the behaviour: easy or difficult. Apart from influencing on behavioural intention, it works with behavioural intentions to directly predict real behaviour action. In short, the rule is that favourable attitude and subjective norms together with great perceived behavioural control would lead to strong intention to perform the behaviour (Ajzen, 1991). Figure 6 presented the relationship within the TPB framework.

The conceptual framework of TPB has been proved by empirical evidences that TPB does predict intentions and behaviour quite well. However, many critics still questioned TPB's sufficiency in explaining human behaviour. Even with well-designed measures, the reliability among attitudes, subjective norms, perceived behavioural

control, intentions rarely exceed 0.75 or 0.80. (Ajzen, 2011). To increase the amount of variance explained by TPB, one possible solution is to add more predictors. Past behaviours, habit were investigated and fed into TPB (Kor & Mullan, 2006; Norman, Cooper, Norman, & Cooper, 2011). Other predictors were also investigated such as prototype similarity, uncertainty avoidance motive, self-concept, perceived autonomy support (Kor & Mullan, 2006; Ravis, Sheeran, & Armitage, 2011).

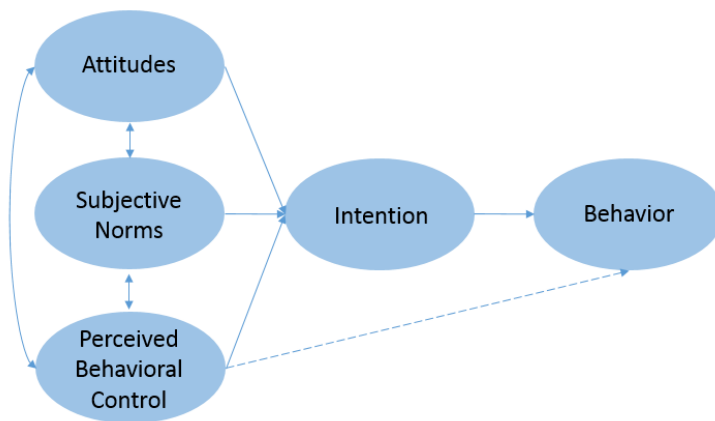


Figure 6: Theory of Planned Behavior Model

3.1.2 Additional variables selection

Additional variables are supposed to be added with careful deliberation. Theoretically, there are several criteria to evaluate and select additional variables that potentially explain the behavioural outcomes. Firstly, the additional variable should be behaviour-specific. That is, the additional variable should be definable and measurable in terms of the target, context, action and time elements. And it should conform to the principle of compatibility. Secondly, the additional variable should be a causal factor determining the intentions. Thirdly, it is supposed to be independent from the theory's three existing variables. Fourthly, the factor added should be applicable to other behaviours studied by social scientists. And finally, it should contribute to the overall prediction of intentions in the framework (Martin Feishbein & Ajzen, 2010).

In practice, variables added usually match the specific characteristics of the object of the research. TPB has been so popular in explaining food consumption behaviour around the world in recent years that there is a huge number of papers employing TPB model or extended TPB model to investigate certain food consumption behaviour in their researches. Several types of food and their additional variables have been classified:

- (1) Organic food has been a focus of study for a long time. From these papers, it could be concluded that it's useful to add some other variables such as consumer trust, knowledge, value-orientation, moral attitudes, sustainability involvement, perceived consumer effectiveness, personal and demographic characteristics and so on (Aertsens, Mondelaers, Verbeke, Buysse, & Van Huylenbroeck, 2011; Aertsens, Verbeke, Mondelaers, & Van Huylenbroeck, 2009; Arvola et al., 2008; Chen, 2007; Nurse Rainbolt, Onozaka, & McFadden, 2012; Nuttavuthisit & Thøgersen, 2017; Tarkiainen & Sundqvist, 2005; Vermeir & Verbeke, 2008; Yadav & Pathak, 2016).
- (2) Regarding to food traceability, labels, extra variables such as habits, past behaviour, moral attitudes, knowledge and demographics are commonly included into TPB framework (McEachern & Warnaby, 2008; Menozzi, Halawany-Darson, Mora, & Giraud, 2015).
- (3) Food with moral characteristics indicates those food products that concern certain moral issues such as food produced in a sustainable way, food with fair-trade label. Additional variables included self-identity, past behaviour, health concern, ethical concern or moral norms, knowledge, personal values and confidence (Dowd & Burke, 2013; O'Connor, Sims, & White, 2017; Robinson & Smith, 2002; Vermeir & Verbeke, 2008).
- (4) Food developed with new technology was a question frequently addressed as well. Ecological concerns, food technology neophobia are good predictors that increased predictive power of TPB model (Kim, 2014; Kim, Jang, & Kim, 2014).
- (5) For fast food, adding habit, moral habits or even parental control (adolescent consumers) is beneficiary to understanding consumption behaviours (Karimi-Shahanjarini et al., 2012; Mahon, Cowan, & McCarthy, 2006; Olsen, Sijtsema, & Hall, 2010).
- (6) Religious self-identity, acculturation and habits are important factors to add into TPB model to understand consumer behaviour in term of religious food such as halal food (Bonne, Vermeir, & Verbeke, 2009; Rahim & Junos, 2012; Shah Alam & Mohamed Sayuti, 2011).

3.1.3 Framework development

The original TPB model includes Attitudes, Subjective Norms and Perceived Behavioural Control and Intention. There are several additional factors to be add based on previous literature review and pre-interviews with targeted interviewees:

trust, awareness of possible issues with honey, knowledge, health consciousness, and demographics.

It is of great significance to add trust considering that honey market faces a lot of challenges in China. One of them is adulteration of honey, including substitution with cheap sweeteners, intensive feeding the honey bees to increase yields, abuse of antibiotics and masking the true origin (Strayer, Everstine, & Kennedy, 2014). And it remains to be a difficult issue to tackle (Li, Shan, Zhu, Zhang, & Ling, 2012). Honey contamination could be another issue fatiguing the domestic consumers. It was reported that antibiotics residues, most notably chloramphenicol, in Chinese honey was a noticeable issue, causing increased testing before entering other countries (Strayer et al., 2014). The contaminants could also be heavy metals (Ru, Feng, & He, 2013), and natural compounds from plants (Zhang et al., 2017; L. Zhu et al., 2018). As summarized in the literature review, Chinese consumers expressed high concerns over food safety issues. Thus, it's paramount to consider consumer trust in studying honey consumers.

Together with high concerns, limited knowledge level over food safety is another characteristic of Chinese consumers. It would be interesting to evaluate whether this is the case in honey consumption and whether knowledge is the barrier for further consumption, where knowledge is divided into subjective and objective knowledge. Subjective knowledge is what consumers believe they know while objective knowledge is what they actually know (Ellis, 2015). The findings would carry practical implications for marketers.

Health consciousness was added due to that Chinese have a quite long history of being health-conscious (Liu et al., 2013). And honey delivers various health benefits. Therefore, health consciousness is assumed to be a powerful predictor.

And finally, demographic variables were added as many other TPB models. Ethnocentrism and altruistic concerns were not taken into consideration because the pre-interviewers showed no traits of ethnocentrism and altruistic concerns over environment or welfare of others.

In all, the extended TPB framework was shaped (Figure 8). Because the specific interest of this research is to identify the variables influencing purchase intention, the arrows all lead to intention and other interactions are neglected.

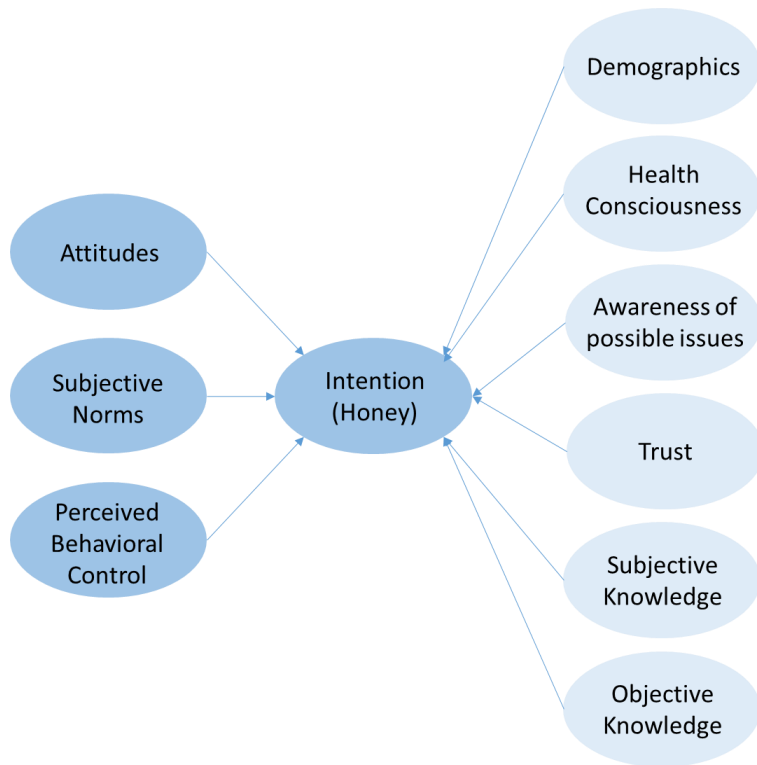


Figure 5: Extended TPB Model explaining honey purchase intention

3.2 Questionnaire development and data collection

3.2.1 Questionnaire development

The questionnaire was developed in an online platform Qualtrics and in English and Chinese language. The full questionnaire was attached in appendix. The whole process was under the supervision from honey experts. The whole questionnaire was attached in Appendices. It could be divided into three sections. The first section tries to record the demographic information. The second section consists of items measuring the latent variables in the extended TPB framework. In the end, honey purchase and consumption pattern, honey label, different honey images and familiarity with bee keeping were addressed in the third section.

In section three, honey purchase frequency, consumption frequency, consumption purposes, and consumption amount at one time were asked to get a clear picture of how they purchase and consume honey. Purchase locations were also asked, because it would be interesting to investigate whether new shopping trend has influenced honey purchasers as well. The white paper issued by China Bee Products Association stated that it became more and more popular to sell honey online (CBPA (China Bee Products Association), 2013). In particular, how consumers respond to different types of honey regarding to different classification standards was addressed.

Solid or liquid honey? Mono-floral or poly-floral honey³? The purchase experience with regard to comb honey⁴ was specifically asked, because it reflects consumer beliefs and knowhows. Likewise, consumers' familiarity with beekeeping was asked. On the other hand, "Quality traceable bee product logo", a label issued by China Bee Products Association was presented to consumers (Figure 9). Honey products with this label indicate better quality, safety and traceability, the latter of which could be done with the QR code in the logo. The earliest record of using this label dated back to 2012⁵. After several years, it would be interesting to evaluate its popularity among consumers. Finally, image profiles of domestic brand honey, honey from local bee keepers and honey imported from EU were pictured.



Figure 6: Quality traceable bee product logo⁶

3.2.2 Data collection

China is a big territory with diverse groups of people. And consumers in China are a great heterogeneity. It's impossible to evaluate all consumers in all regions. Typically, researchers choose to investigate consumers in big cities such as Shanghai and Beijing. For example, a consumer survey was conducted in Beijing, Guangzhou, and Shanghai, generating basic knowledge on market segments of Chinese consumers in term of purchasing foreign apparel (Dickson, Lennon, Montalto, Shen, & Zhang, 2004). Where should the data be collected?

³ Monofloral honey is a type of honey which has a distinctive flavour or other attribute due to its being predominantly from the nectar of one plant species. Polyfloral honey, also known as wildflower honey is derived from the nectar of many types of flowers

https://en.wikipedia.org/wiki/Monofloral_honey#cite_note-1

<https://en.wikipedia.org/wiki/Honey#Polyfloral>

⁴ Comb honey is honey intended for consumption which is still contained within its original hexagonal-shaped beeswax cells, called honeycomb. It is eaten as produced by honey bees and has received no processing, filtering, or manipulation. https://en.wikipedia.org/wiki/Comb_honey

⁵ [http://china-bee.org.cn/\(S\(mozyja55vn131i45sauoplyx\)\)/newsDetail.aspx?SYSTEM_NEWS_ID=57638b34-ff78-427c-9c7e-b309b76cefc1&TYPE=2](http://china-bee.org.cn/(S(mozyja55vn131i45sauoplyx))/newsDetail.aspx?SYSTEM_NEWS_ID=57638b34-ff78-427c-9c7e-b309b76cefc1&TYPE=2)

⁶ The picture of the label was cited from the website of China Bee Product Association: http://www.china-bee.com/comcontent_detail4/i=22&comContentId=22.html

The data was collected in Tonglu County, a county from Hangzhou city, Zhejiang Province (Figure 10). County is in the third level of the administrative hierarchy of China. If look at the third level, counties occupied a large proportion of China (Figure 11). Tonglu County has 1825 km² of land. Its population is 0.41 million, among which 43.6% live in urban area and 56.4% live in rural area. The GDP per capita in the county is around 97000 RMB (14000 USD) which is slightly higher than the national level 10164 USD⁷. The date of collecting data is from 20 April to 10 May, 2018.

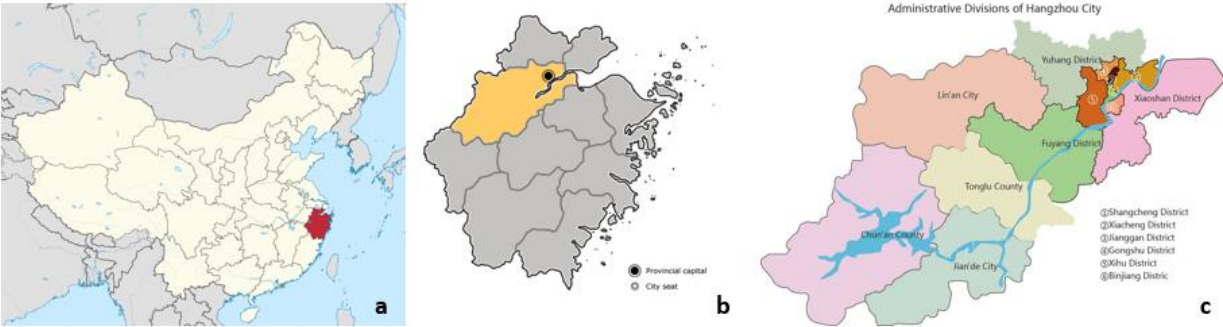


Figure 7: a. Zhejiang Province in China; b. Hangzhou City in Zhejiang Province; c. Tonglu County in Hangzhou city⁸

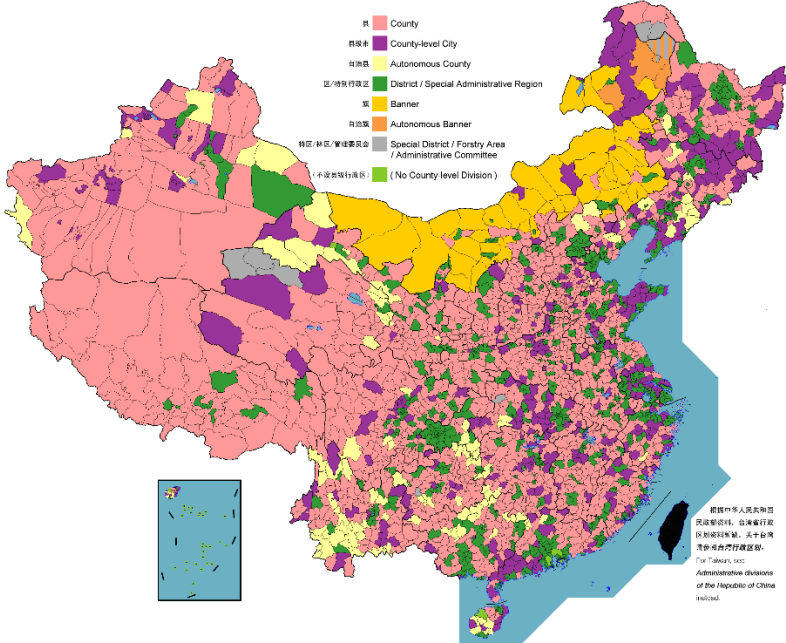


Figure 8: County distribution map⁹

⁷ The data was cited from world bank and the annual statistic report of Tonglu County, issued by County government.

⁸ In figure 10, map a and b were cited from Wikipedia, map c was cited from Hangzhou Tourism Committee website:

a: <https://en.wikipedia.org/wiki/Zhejiang>
 b: <https://en.wikipedia.org/wiki/Hangzhou>
 c: http://en.gotohz.com/whyhangzhou/quickfacts/201706/t20170621_147113.shtml#sthash.TfolT2Ds.dpbs

Apiculture was a business worth 777 million RMB in 2017 in Tonglu county. There are 67.6 thousand bee hives in the county in 2017. The annual honey production was 5500 tons. Since 1988, the county was awarded as the honey production base by Ministry of Agriculture. There are in total 28 bee products companies in the county, three of which were awarded as “dragon head” agricultural enterprises by the provincial government¹⁰. According to an interview with officials from Agriculture Bureau, there are around 1500 professional bee keepers who relied on the income of beekeeping. There are also a large number of hobbyists they added.

3.2.3 Data analysis

The data was mostly analysed in SPSS 24.0 while a small part of the data was analysed in Excel. The statistical tests included descriptive analysis which helped to get the socio-demographic characteristics of the sample as well as the mean of different variables. The purchase and consumption charts were done in excel however. The Cronbach’s α test was used to check the consistency among different items that measure the same variable. Non-parametric tests were done to compare the values of different groups, for example, knowledge level under different familiarity group, and the images of different honey.

Further, the relationship between purchase intention and its potential determinants would be investigated by linear regression methods. The assumption of the regression models was summarized in the formula below:

$$int_i = \beta_{i1} * att + \beta_{i2} * sn + \beta_{i3} * pbc + \beta_{i4} * tru + \beta_{i5} * hc + \beta_{i6} * dem + \beta_{i7} * obk + \beta_{i8} * sbk + \beta_{i9} * api + \beta_i + e_i$$

where

i= Honey, Chinese-brand honey, Honey imported from EU, Honey from local bee keeper

att=attitudes,

sn=subjective norms,

pbc=perceived behavior control,

tru=trust,

hc=health consciousness,

dem=demographics,

obk=objective knowledge,

sbk=subjective knowledge.

⁹ The map was cited from Wikipedia:

https://en.wikipedia.org/wiki/Counties_of_the_People%27s_Republic_of_China

¹⁰ The data was cited from a document issued by Agriculture Bureaus of Tonglu County in 2018: Current Situation, existing problems and future development strategies of bee industry in Tonglu County (in Chinese).

Chapter 4: Results

The results are composed of six parts. The first part included the sociodemographic characteristics of the sample. The second part described the purchase and consumption pattern which elucidated their purchase locations, honey types, frequencies, consumption frequencies as well as consumption amount. In the third part, respondents evaluated three kinds of honey respectively. They commented on the quality, taste, safety, price and so on. Further, respondents' familiarity with bee keeping, subjective and objective knowledge were addressed in the fourth part. The fifth part employed regression model to identify variables that influence purchase intention of honey in general and specific types of honey. In the end, the sample was grouped into three segments based on their amount of honey usage. In addition, the characteristics of the three segments were profiled.

4.1 Socio-demographic characteristics

The online survey was completed by 376 participants. The socio-demographic profiles of the sample were summarized in table 1. The sample is composed of 40.2% male and 59.8% female while the gender distribution in the county is male (49.8%) and female (50.2%)⁷. Although sample has a higher percentage of females, it's reasonable that females involve more actively in food purchase. The age ranges from 15 to 56 with 29.5% below 25 years, 48.4% between 25 and 35 years, and 22.1% above 35 years. The average age of the sample is 30 years old. Compared with the age distribution in the County, the sample tended to have larger share of people under 35 years. On the one hand young participants represented the future of honey market. On the other hand, the survey was done in universities, hospitals, banks, supermarkets, schools and other public agencies in which young people are logically the majority.

Most of the participants were married or cohabiting with their partners (67%) with a household size of 4 persons. Over half of the participants already had children (56.6%) and they had average 1 child. Moreover, the youngest child is around 7 years old on average. A large proportion of the sample obtained bachelor's degree or even higher (68%). It is in line with the fact that approximately 78% of the participants were under 35 years old, considering the fact that younger generations have easier access to good education. The rest participants either have vocational education (16%) or

secondary and primary education (16%). There are quite some participants have a gross income less than 10000 RMB which is lower than average income 46024 across the county⁷. This could be explained that quite some respondents were university students and housewives. Respondents who had an income between 10000-90000 RMB represented 35.4% of the sample. And the high-income group (>90000 RMB) have 33% of the respondents.

Table 1: Sociodemographic Profile (n=376)

		Value
Gender	Male	40.2%
	Female	59.8%
Age	<25 years	29.5%
	25-35 years	48.4%
	>35 years	22.1%
	Mean±SD	29.9±8.0 years
Married or cohabiting	Yes	63%
	No	37%
Household size	Median	4 persons
Children	Yes	56.6%
	No	43.4%
Number of children	Median	1 child
	Mean±SD	6.9±6.6 years
Age of youngest child	Min	1 year
	Max	29 years
Education	Secondary and Primary education or less	16.0%
	Vocational education	16.0%
	Bachelor and above	68%
Annual gross income	<10000 RMB	31.6%
	10000-90000 RMB	35.4%
	>90000 RMB	33%

4.2 Honey purchase and consumption patterns

4.2.1 Honey purchase pattern

In order to portrait the purchase and consumption patterns, there are several questions particularly focusing on how respondents purchase and consume honey. Figure 9 summarized purchase frequency, location and honey types. Rarely, respondents purchase honey more frequent than once a month (11%). 13% of the sample purchase honey every two months and 17% purchase every three or four

months. The majority of the sample (44%) purchase honey once or twice a year. Nevertheless, there were still quite some respondents (15%) never purchase honey (Figure 9-a).

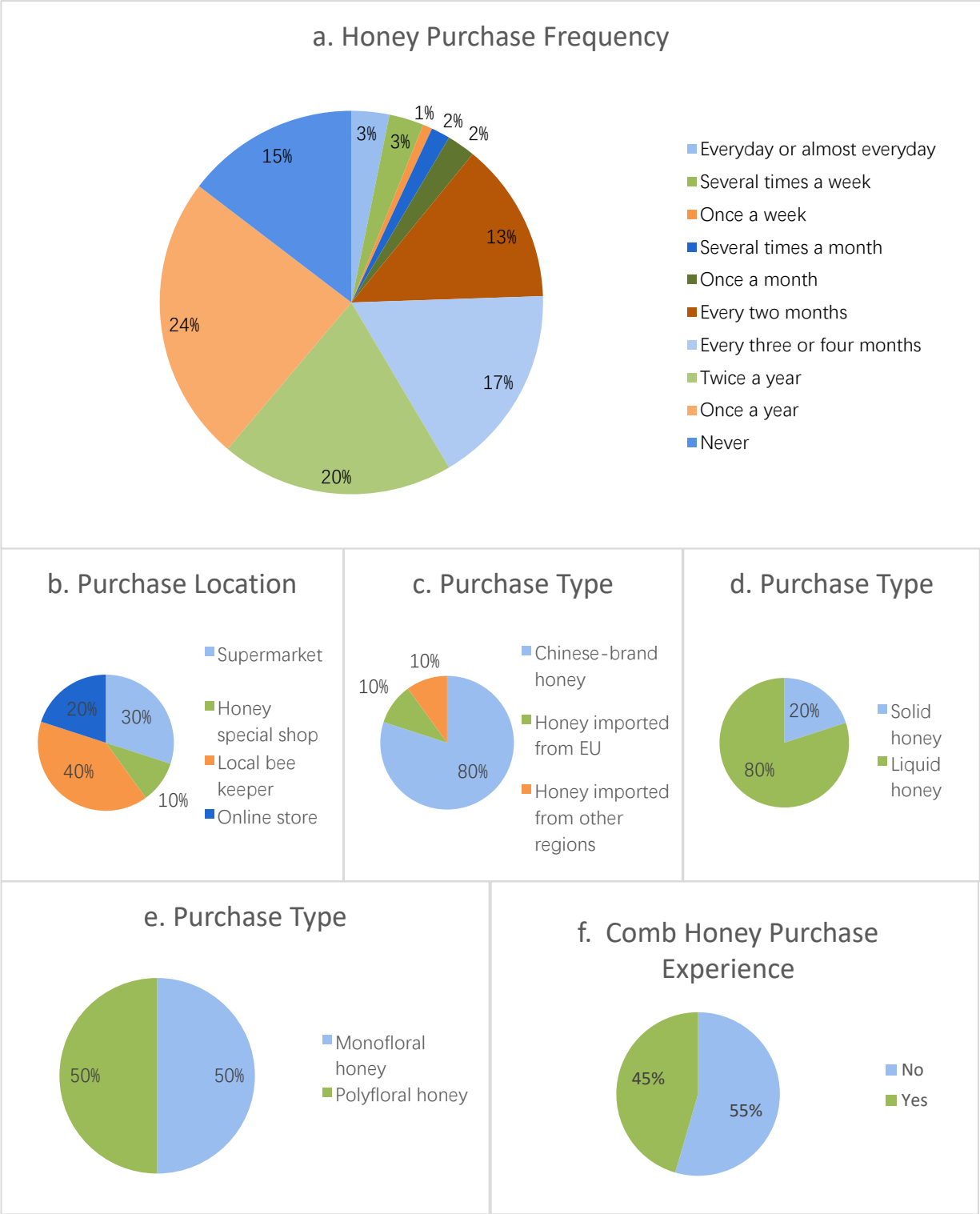


Figure 9: Honey purchase characteristics and pattern

For Figure9-b, c, d, e, the average shares were easily calculated because the questions were asked as “out of 10 times that you purchase honey, how many times do you purchase in the following places / the following types of honey”. It seemed that people in the survey mostly purchase in local honey bee keeper and supermarkets (40% and 30%). In the 20% and 10% of the times, they would purchase online or honey special shops. Giving the options of Chinese-brand honey, honey imported from EU and other regions, the respondents would purchase Chinese-brand honey in most of the times (80%). In the rest of the times, they either purchase honey from EU (10%) or other regions (10%). As for solid and liquid honey, 80% of the times they would purchase liquid honey and the rest times they purchase solid one. However, respondents seemed to express no different preferences between monofloral and polyfloral honey. They would spend half times in purchasing monofloral honey (50%) and the other half in purchasing polyfloral honey (50%). Finally, 45% of the respondents answered yes when asked whether they have purchased comb honey.

4.2.2 Honey consumption pattern

Figure 10 included consumption quantity, purpose, and frequency. The question of consumption quantity is “in what quantity do you typically eat, drink or use honey at one eating occasion”. Clearly, the majority would consume either one tea spoon which is around 7 grams or one table spoon approximately 21 grams¹¹ (84%). Some respondents would consume a small portion around 30 grams (14%). Only a tiny part would consumer a larger portion of 50 grams (2%) (Figure10-a). Additionally, in two weeks the respondents would eat, drink or use honey for 5.6 days on average. Nearly half of the respondents consume honey between 0 to 4 days in two weeks (43%). The group consuming honey between 5 to 9 days occupies 38% of the total sample. The rest has a high frequency of consuming honey: 10 – 14 days out of two weeks (Figure 10-b).

The purpose of consuming honey, or the benefits sought from honey consumption varies. But before describing the results, it’s necessary to clarify the way of calculating shares. Respondents were asked “out of two weeks, how often do you eat, drink or use honey for the following purposes”. Worth to mention is that there is no limitation on the days they spend on a single purpose. That is, a respondent could eat, drink or

¹¹ The calculation of how many grams a tea/table spoon honey equal refers to <https://www.calculateme.com/recipe/1-tablespoons-of-honey>

use honey every day for all the six purposes. Firstly, the percentage of an individual respondent spending on each purpose was calculated. And then, the mean percentages of different purposes were achieved. According to Figure 10-c, the distributions of honey consumption purposes were quite even, ranging from 12% (as medicine) to 20% (as table honey). They also use honey as natural food sweetener (18%), cooking ingredient (14%), health supplement (18%), and beauty and cosmetic products (18%). Finally, the sample was classified into three segments based on the amount they would consume in two weeks. The consumption amount was the result of frequency multiply with quantity, assuming that every respondent eat honey once a day. Light users consume between 0 to 42 grams in two weeks (36%) while medium users consume 49-126 grams (29%). Heavy users consume 147-700 grams in two weeks (35%).

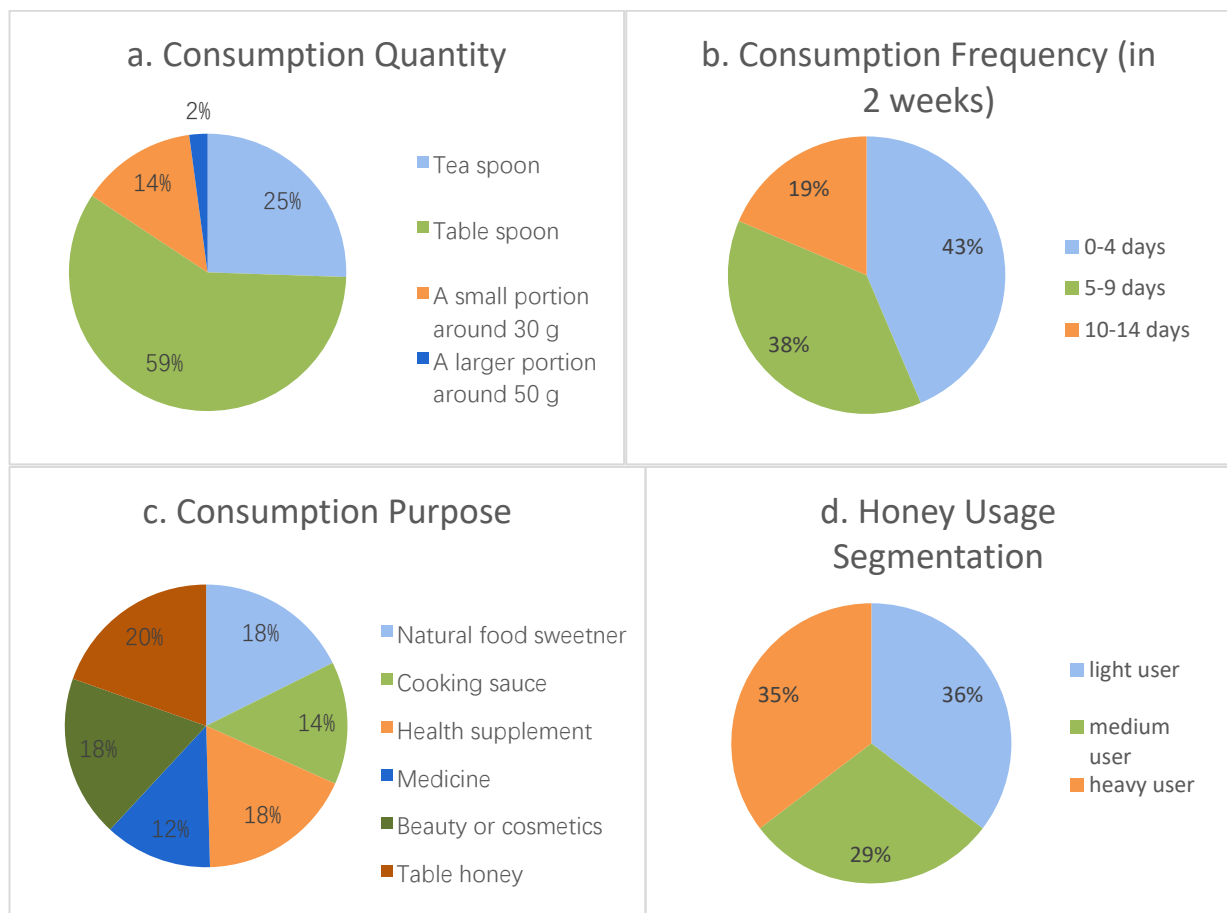


Figure 10: Honey consumption pattern and characteristics

4.3 Honey images

In general, respondents expressed favourable attitudes, high trust and relatively high awareness of possible issues with honey, given their average Likert score (table 2).

Then how respondents evaluate the three specific types of honey were recorded. They assessed if honey is healthy, safe, tasty, authentic, sustainable, environment-friendly, affordable, high value for money, trustworthy and free of hazards.

Table 2: Attitudes, Trust, and Awareness of possible issues in relation to honey,

		Cronbach's Alpha	Mean±SD⁽ⁱ⁾
Attitudes	sn1	0.727	3.96±0.83
	sn2		
	sn3		
	sn4		
Trust	tru1	0.852	3.82±0.86
	tru2		
	tru3		
	tru4		
Awareness of possible issues with honey	api1	0.908	3.30±0.95
	api2		
	api3		
	api4		
	api5		
	api6		
	api7		

⁽ⁱ⁾denotes that values were measure in a 5-Likert scale.

Table 3 gives mean scores of the ten evaluation questions among three types of honey. The average score of Chinese-brand honey ranked from 3.78 (free of hazards) to 4.13 (affordable). For honey from local bee keeper, the average scores were highest, from 4.01 (sustainable) to 4.15 (affordable), yet the difference between the highest was very small. Honey imported from EU, however, had a relatively low mean score. It was revealed that respondent gave highest score 3.59 to “safe” and “free of hazards”. But they believed it was not high value for money, which had an average score 3.24.

The Friedman test proved that the average score of each evaluation item was different at 0.001 significance level. The disparities among three types of honey were verified by figure 11. Clearly, honey from local bee keeper enjoyed best evaluation scores, and Chinese-brand honey was second best evaluated. Furthermore, it seemed that honey from EU was the last one to be well scored. In particular, the distances between Chinese-brand honey and honey from local bee keeper are relatively far in terms of “authentic” and “free of hazards”. Items “affordable” and “high value for money” had hugest differences between honey form EU and the rest two types of honey.

Table 3: Consumer images of Chinese-brand honey, honey from local bee keeper, honey imported from EU and their comparisons,

	Chinese-brand Honey (Mean±SD) ⁽ⁱ⁾	Honey from local bee keeper (Mean±SD) ⁽ⁱ⁾	Honey imported from EU (Mean±SD) ⁽ⁱ⁾	p-value
Heathy	3.92±1.02	4.07±1.04	3.57±1.14	<0.001**
Safe	3.95±1.07	4.05±1.01	3.59±1.11	<0.001**
Tasty	3.94±1.02	4.08±1.00	3.58±1.13	<0.001**
Authentic	3.87±1.05	4.09±1.01	3.55±1.14	<0.001**
Sustainable	3.89±1.05	4.01±1.06	3.49±1.13	<0.001**
Environment friendly	3.87±1.05	4.02±1.05	3.56±1.12	<0.001**
Affordable	4.13±1.04	4.15±1.01	3.32±1.16	<0.001**
High value for money	3.93±1.07	4.03±1.03	3.24±1.14	<0.001**
Trustworthy	3.87±1.05	4.06±0.98	3.55±1.12	<0.001**
Free of hazards	3.78±1.07	4.05±1.01	3.59±1.09	<0.001**

⁽ⁱ⁾denotes that values were measure in a 5-Likert scale.

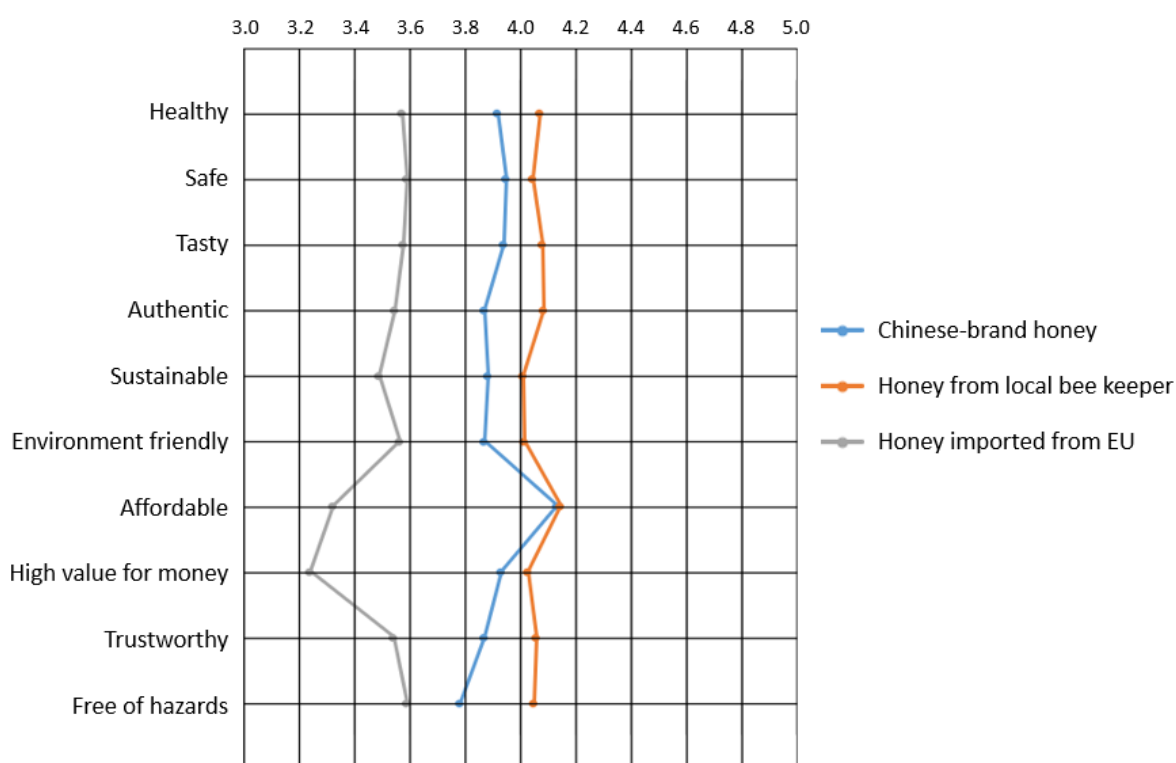


Figure 11: Images of Chinese-brand honey, honey form local bee keeper, honey imported from EU, the values are a five-point Likert ranging from 1-5 (Note that the scale in the figure only presents the range 3-5, which indicates that respondents gave positive evaluation on each of the aspects of the three types of honey)

4.4 Consumer knowledge

4.4.1 Knowledge, familiarity with label and beekeeping

The level of knowledge, their familiarity and knowledge about honey label, and familiarity with bee keeping were summarized in this part.

Table 4 gave an overview of subjective knowledge, objective knowledge, familiarity and knowledge about label, and familiarity with bee keeping. Subjective knowledge measured to what extent respondents believe they have knowledge about honey. The mean score was 3.26, indicating relatively low confidence about honey knowledge. This is because it was measure by a 5-Likert and 3 is the neutral score below which respondents didn't believe they have knowledge about honey. On the other hand, objective knowledge was measure in a way that five questions were proposed to respondents and their score was the number of questions they gave correct answers. From the mean of objective knowledge, the respondents seemed to have 3 questions answered.

When the respondents were shown the honey label, 49.5% claimed they had seen the label before. And they were further asked six questions. On average, they answered three questions correctly, half of the questions. The rest 50.5% did not see the label yet. Finally, they were asked how familiar with bee keeping. 35.9% stated that they were not familiar with bee keeping at all. The rest 64.1% actually was formed by two groups. The first group was 61.7% of the total sample, claiming somebody they personally knew is a bee keeper while the rest 2.4% said they were bee keepers themselves.

Table 4: knowledge about honey and familiarity with honey label and bee keeping

			Value
Subjective knowledge	sbk1	Cronbach's Alpha	0.848
	sbk2	Mean±SD ⁽ⁱ⁾	3.26±1.25
Objective knowledge		Mean±SD	2.78±1.11
Label		Yes	49.5%
		No	50.5%
		If yes, Mean±SD ⁽ⁱⁱ⁾	2.74±1.23
Familiarity		Not at all	35.9%
		I'm familiar with bee keeping	64.1%

⁽ⁱ⁾ means that values were measured by 5-Likert scale. ⁽ⁱⁱ⁾ denotes the number of questions the respondents answered correctly and the total number of questions is 6.

4.4.2 Knowledge level for different familiarity groups

The sample was classified into two groups based on their familiarity with bee keeping. This was because it was interesting to explore whether familiarity would influence on their knowledge level. According to table 5, the subjective knowledge levels differed significantly between the two groups while objective knowledge levels were not. The group which was familiar with bee keeping tended to express higher level of subjective knowledge with a mean score of 3.5. This was much higher than their objective knowledge level. Nevertheless, the average score of subjective knowledge was below 3 in the other group. In other words, respondents in this group believed that they didn't have enough knowledge about honey. Still, they had similar level of objective knowledge level to the group who was familiar with bee keeping. The two group both had an average score of 2.8 of objective knowledge, which means they averagely answered 3 questions correctly.

Table 5: knowledge under different familiarity levels

Familiarity	Not at all (n=135)	I'm familiar with bee keeping (n=241)	p-value
Objective knowledge⁽ⁱⁱ⁾	2.76±1.00	2.79±1.17	0.627
Subjective knowledge⁽ⁱ⁾	2.83±1.30	3.50±1.16	<0.001**

⁽ⁱ⁾ means that values were measured by 5-Likert scale. ⁽ⁱⁱ⁾ denotes the number of questions the respondents answered correctly and the total number of questions is 5.

4.5 TPB model

A crucial part of data analysis is to identify determinants of honey purchase intentions with regards to honey, Chinese brand honey, honey from local bee keeper and honey imported from EU. Before going through linear regression models, the Cronbach's Alpha values were verified that they were all higher than 0.7 (table 2, 4, 6). In this sense, the internal reliability of each variable was consistent and sufficient for regression analysis. And the assumptions of general linear regressions were also checked and guaranteed. There are four types of honey purchase considered in this analysis as dependent variable: honey in general, Chinese-brand honey, honey from local bee keeper, and honey imported from EU. Therefore, there are four dependent variables purchase intention of each honey type. Noticeably, purchase intention of honey was calculated as the mean value of the rest three types of purchase intention. Independent variables included attitudes, perceived behaviour control, subjective norms, socio-demographic variables, health consciousness, trust, subjective and objective knowledges (Figure 12). Socio-demographic variables included gender, age, household size, status of married or cohabiting, children, income and education.

Table 6: TPB variables summary

		Cronbach's Alpha	Mean±SD⁽ⁱ⁾
Subjective norms	sn1	0.817	3.60±0.97
	sn2		
	sn3		
	sn4		
Perceived behavior control	pb1	0.842	3.56±0.92
	pb2		
	pb3		
	pb4		
	pb5		
Intention (honey from local bee keepers)	int1	0.852	4.26±0.94
	int2		
Intention (Chinese-brand honey)	intc1	0.793	3.97±0.96
	intc2		
Intention (honey imported from EU)	inte1	0.887	3.34±1.20
	inte2		
Health consciousness	hc1	0.775	3.82±0.89
	hc2		

⁽ⁱ⁾denotes that values were measure in a 5-Likert scale.

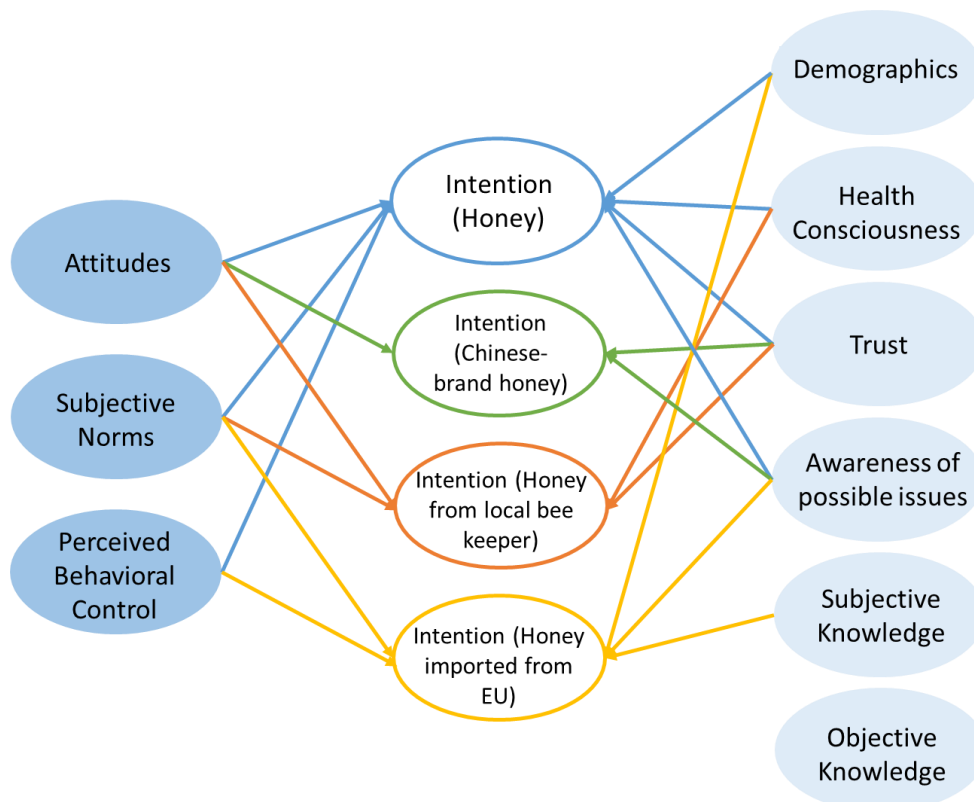


Figure 12: Determinants of purchase intention included in the regression analysis

Table 7 summarized the regression analysis results. For the first regression, the three original TPB variables, attitudes, subjective norms, and perceived behaviour control were significant predictor of purchase intention of honey. The additional TPB variables trust, health consciousness and awareness of possible issues with honey were also significantly influencing purchase intention of honey. Their coefficients were all positive so that they were positive factors predicting honey purchase intention. Purchase intention differed between female and male. And male had a smaller purchase intention than female. Also, the R^2 told that the regression model explained 45.6% of the variances of dependent variable. In the second regression model, attitudes, trust and awareness of possible issues with honey significantly and positively predicted purchase intention of Chinese-brand honey. Moreover, the regression explained 25.2% of the dependent variable. The third regression tried to explain purchase intention of honey from local bee keeper ($R^2=28.9\%$). Results implied that attitudes, perceived behaviour control, trust and health consciousness were main factors positively linked with purchase intention of honey from local bee keeper. Finally, subjective norms, perceived behaviour control, subjective knowledge, awareness of possible issues with honey, age and children were major predictors of purchase intention of honey from EU ($R^2=27.4\%$). Noticeably, age of the respondents

had a negative relationship with purchase intention. If age increases one year, the purchase intention would decrease 0.026. In addition, respondents with children expressed a purchase intention higher by 0.281 than that of the others, given presence of children is a binary variable.

Table 7: determinants of purchase intention of honey, Chinese-brand honey, honey from local bee keeper, honey imported from EU

Dependent variable	Significant independent variable	b	SE	β	95% CI for b	
					Lower	Upper
Purchase intention of honey (R² = 0.456)	Attitudes	0.094*	0.038	0.109	0.019	0.170
	Subjective norms	0.106*	0.041	0.143	0.025	0.186
	Perceived behaviour control	0.110**	0.043	0.141	0.025	0.194
	Trust	0.209**	0.040	0.252	0.130	0.288
	Awareness of possible issues with honey	0.110**	0.031	0.180	0.074	0.196
	Health consciousness	0.123*	0.037	0.153	0.050	0.197
	Gender	-0.123*	0.057	-0.085	-0.236	-0.011
Purchase intention of Chinese-brand honey (R² = 0.252)	Attitudes	0.272**	0.057	0.236	0.161	0.384
	Trust	0.359**	0.055	0.324	0.251	0.467
	Awareness of possible issues with honey	0.096*	0.046	0.096	0.005	0.187
Purchase intention of honey from local bee keeper (R² = 0.289)	Attitudes	0.195**	0.056	0.172	0.084	0.306
	Perceived behaviour control	0.123*	0.053	0.121	0.019	0.228
	Trust	0.204**	0.059	0.187	0.088	0.319
	Health consciousness	0.245**	0.055	0.232	0.137	0.354
Purchase intention of honey from EU (R² = 0.274)	Subjective norms	0.193*	0.076	0.156	0.043	0.342
	Perceived behaviour control	0.163*	0.081	0.125	0.003	0.323
	Subjective knowledge	0.205**	0.049	0.213	0.108	0.301
	Awareness of possible issues with honey	0.230**	0.061	0.182	0.109	0.350
	Age	-0.026*	0.009	-0.174	-0.043	-0.010
	Children	0.281*	0.137	0.116	0.011	0.551

General Linear Regression model results. **P < 0.001; * p < 0.05, b: unstandardized coefficients, β : standardized coefficients

4.6 Consumer segmentation

In previous part, all the respondents have been grouped into three segments on the basis of their amount of honey usage. This part compared demographic characteristics, TPB model variables, images of different honey, and honey purchase patterns of three segments. Therefore, the traits of each segment and their differences would be captured.

4.6.1 Socio-demographic comparisons among segments

Except gender and household size, education, income, age, children and status of married or cohabiting are significantly different among segments. There are more respondents married or cohabiting with their partners in the segment of heavy users, compared with light users. Within the segment of light users, there are more respondents unmarried or not cohabiting with others. Nevertheless, the situation is opposites in heavy users group where there's more respondents married or cohabiting. Likewise, heavy users have higher percentages of respondents with children in comparison with light users. Within heavy users, respondents with children are the majority. Respondents without children, however, are the majority within light users. In addition, age of light user is smaller than that of heavy user at significance level.

As for education background, heavy users have more respondents who finished vocational education and less respondents who obtained bachelor or above, in contrast with light and medium users. The number of respondents with bachelor degree or above is significantly higher than those who finished vocational education within light users. Yet heavy users have more respondents with vocational education than bachelor and above education. Income has three categories: low (<10000 RMB), middle (10000-90000 RMB) and heavy income (>90000 RMB). Medium users have respondents with low income, the number of which is larger than that of heavy users. Heavy users, in contrast to medium users, have more middle-income respondents. Within medium users, there are significantly more low-income respondents compared with medium-income ones. And there are more middle-income respondents compared with low-income ones in heavy users group.

Table 8: socio-demographic profiles of light, medium and heavy segments (N=376, mean or % of the sample).

Segments (%)		Light users (35.4)	Medium users (29.3)	Heavy users (35.4)	
Socio-demographic variables	Gender	Female %	33.8	31.6	34.7
		Male %	37.7	25.8	36.4
	Married or Cohabiting	Yes %	29.5 ^{a(2)}	30.8 ^{ab}	39.7 ^{b(2)}
		No%	45.3 ^{b(1)}	26.6 ^{ab}	28.1 ^{a(1)}
	With Children	Yes %	28.6 ^{a(1)}	29.6 ^{ab}	41.8 ^{b(2)}
		No%	44.2 ^{b(2)}	28.2 ^{ab}	27.6 ^{a(1)}
	Education	Secondary and Primary education or less %	28.3 ⁽¹⁾⁽²⁾	33.3	38.4 ⁽¹⁾⁽²⁾
		Vocational education %	16.7 ^{a(1)}	23.3 ^a	60.0 ^{b(1)}
		Bachelor and above %	41.4 ^{b(2)}	29.7 ^{ab}	28.9 ^{a(2)}
	Income	<10000 RMB %	34.5 ^{ab}	39.5 ^{b(2)}	26.0 ^{a(1)}
		10000 – 90000 RMB %	36.8 ^{ab}	21.1 ^{a(1)}	42.1 ^{b(2)}
		>90000 RMB %	34.7	28.2 ⁽¹⁾⁽²⁾	37.1 ⁽¹⁾⁽²⁾
	Age (years)		34 ^b	35 ^{ab}	33 ^a
	Household size (persons)		3	4	4

The superscripts a, b, and c indicate significant difference across the segments (rows) at 0.05 level in ascending order while (1), (2) and (3) denotes the significant difference within the segments (column) at 0.05 level in ascending order.

Among TPB variables, subjective knowledge and purchase intention of honey imported from EU are significantly different. At significant level, heavy users have higher level of subjective knowledge and awareness of possible issues with honey, compared with the rest two groups. There are discrepancies of purchase intention of honey imported from EU. Heavy users expressed higher purchase intention of EU honey comparing with light users. Logically, it was found that heavy users formed a better image of honey from EU in contrast to medium users. As for purchase pattern, heavy users purchase most frequently and light users purchase least frequently. Besides, heavy users and medium users purchase more solid honey and imported honey from both EU and other regions. Furthermore, they purchase more in honey shops.

Table 9: other profiles of light, medium and heavy segments (N=376)

Segments (%)		Light users (35.4)	Medium users (29.3)	Heavy users (35.4)	
TPB variables ⁽ⁱ⁾	Attitudes	3.93±0.08	3.96±0.08	3.96±0.07	
	Subjective norms	3.53±0.09	3.54±0.09	3.85±0.08	
	Perceived behaviour control	3.47±0.09	3.46±0.10	3.74±0.06	
	Trust	3.75±0.08	3.84±0.08	3.88±0.07	
	Awareness of possible issues with honey	3.22±0.09 ^a	3.19±0.09 ^a	3.44±0.07 ^b	
	Health Consciousness	3.85±0.08	3.72±0.10	3.86±0.07	
	Subjective Knowledge	2.86±0.11 ^a	3.25±0.11 ^a	3.66±0.10 ^b	
	Purchase intention of honey	3.80±0.06	3.81±0.07	3.95±0.06	
	Purchase intention of Chinese-brand honey	3.98±0.09	3.93±0.09	3.98±0.08	
	Purchase intention of honey from local bee keeper	4.27±0.08	4.25±0.10	4.26±0.08	
	Purchase intention of honey imported from EU	3.15±0.11 ^a	3.24±0.11 ^{ab}	3.60±0.10 ^b	
	Images of different honey ⁽ⁱ⁾	Image of Chinese-brand honey	3.90±0.08	3.93±0.10	3.94±0.06
Image of honey from local bee keeper		4.07±0.08	4.06±0.10	4.05±0.06	
Image of honey from honey imported from EU		3.50±0.09 ^{ab}	3.27±0.09 ^a	3.70±0.07 ^b	
Honey purchase patterns	Purchase frequency ⁽ⁱⁱ⁾	3.84±1.52 ^a	7.41±2.15 ^b	6.35±1.66 ^c	
	Times of purchasing	solid honey	1.02±0.20 ^a	2.36±0.26 ^b	3.30±0.28 ^b
		liquid honey	8.97±0.20	7.64±0.26	6.70±0.28
	Times of purchasing	polyfloral honey	5.04±0.34	5.06±0.34	4.93±0.29
		monofloral honey	4.95±0.34	4.94±0.34	5.07±0.29
	Times of purchasing honey from	supermarket	3.17±0.30	2.51±0.28	2.52±0.23
		honey special shop	0.82±0.14 ^a	1.63±0.22 ^b	1.83±0.18 ^b
		local bee keepers	4.10±0.35	4.15±0.36	3.78±0.29
	Times of purchasing	online	1.93±0.26	1.71±0.24	1.87±0.21
		Chinese-brand honey	8.98±0.20	7.56±0.33	6.02±0.33
honey imported from EU		0.65±0.13 ^a	1.52±0.25 ^b	2.26±0.24 ^b	
	honey imported from other regions	0.37±0.10 ^a	0.92±0.17 ^b	1.71±0.20 ^b	

The superscripts ^{a-c} indicates significant difference across the segments (rows) at 0.05 level in ascending order while ⁽¹⁾⁻⁽³⁾ denotes the significant difference within the segments (column) at 0.05 level in ascending order. ⁽ⁱ⁾means that values were measure in 5-Likert scale. ⁽ⁱⁱ⁾purchase frequency was calculated as the times of purchase in a year.

Chapter 5: Discussion and recommendations

This study sought to explore consumers' purchase and consumption pattern, their knowledge levels, familiarity with the honey label, images of different honey types. The study also extended its purpose of identifying determinants of honey purchase intentions by using TPB models. Another objective of the study is segmentation of the consumers regarding their honey usage amount. These results provide practical suggestions for domestic honey producers, foreign honey exporters and the policy makers, which was the ultimate objective of the study. The respondent who have purchase comb honey before did not exceed half of the total number so that there is potential to grow.

5.1 Discussion of the results

5.1.1 Honey purchase and consumption pattern

The purchase frequency among consumers who participated in the study was skewed towards low frequencies such as once a year, twice a year, every three or four months. It was in line with previous studies in France and Italy, where the majority consumers purchased honey mainly once a year, twice a year or every three of four months (Menozzi et al., 2015). In Hungary, over half consumers purchased honey occasionally which is less frequent than once a month (Ványi et al., 2011). It was probably due to the fact that consumers consumed honey at a small dose so that they need not to purchase frequently.

As for purchase locations, respondents would purchase honey most frequently from local bee keepers, compared to supermarkets and online. They purchased the least frequently in specialty shops. In other countries, for example in Romania, consumers also purchased often from honey producers and open markets directly and they purchased less often in supermarkets or special shops (Arvqnitoyannis & Krystallis, 2010). Like Romania, the County is an important honey production base with 67.6 thousand bee colonies and around 1500 professional honey producers. There exists a great number of bee keepers as hobbyists or producers. Therefore, it is expected that consumers to purchase more frequently from local bee keepers in the county. It also aligned with the fact many respondents claimed they were familiar with bee keeping. And purchasing honey online has become common among Chinese consumers, owing to the fast development of online platform such as Taobao. The growing trend

of purchasing honey online was also captured by the white paper (CBPA (China Bee Products Association), 2013).

Facing Chinese-brand/imported honey, solid/liquid honey, respondents preferred Chinese-brand honey and liquid honey because they purchased most frequently these two types of honey. However, purchase frequencies of monofloral and polyfloral honey were not different. Purchase frequency difference between Chinese-brand and imported honey would be discussed together with honey images in the next part. The preference towards liquid honey was consistent with earlier findings. It was found that Italian consumers had higher WTP towards liquid honey (Cosmina et al., 2016). Floral sources had an impact on the US consumers as the unique monofloral honey was associated with high price (Unnevehr & Gouzou, 1998).

The average consumption frequency of five to six days per two weeks was higher than Romanian consumers, the majority of whom consumed less than three or four times a month (Arvqnitoyannis & Krystallis, 2010; Pocol, 2011). Most of them would consume one tea spoon or table spoon in one occasion. The purposes of consuming honey distributed evenly rather than concentrated on “table honey”. In other countries, however, most consumers would use honey as spread (Arvqnitoyannis & Krystallis, 2010). Respondents had various way of using honey which was consistent with other research. For example, it was found that Asians had higher tendency to use honey as drinks rather than spread and they had alternative purposes to use honey such as skin care and therapeutic agent in west Australia (P J Batt & Liu, 2012).

5.1.2 Consumer images of honey

In general, consumers had the most positive image of honey from local bee keeper, followed by Chinese-brand honey, and then EU honey. Earlier researches had similar findings that Italian consumers had strong and positive preferences towards locally produced honey (Cosmina et al., 2016). Consumers in Saudi Arabia also tended to prefer domestic honey (Al-Ghamdi et al., 2014). In the U.S., consumers demonstrated greater demand for locally produced honey (S. Wu, Fooks, Messer, & Delaney, 2015b).

In comparison to the Chinese-brand honey and honey from local bee keeper, honey imported from EU was believed to be less “affordable” and “lower value for money”. It seemed that consumers were price-cautious about honey from EU. And comparing

Chinese-brand honey with honey from local bee keeper, the former was found to be less “authentic” and “free of hazards” perceived by consumers. Such difference probably It was found in previous part that consumers would purchase Chinese-brand honey more often than imported honey.

There are several possible explanations for the heterogeneous images. The first explanation was the negative media information about imported honey. For instance, there were officials from Inspection and Quarantine Bureau reporting adulteration and contamination issues of imported honey (Sun, Xueting; Li, 2017). There was also news online about quality issues of imported honey¹². It was found in the U.S. that consumers demonstrated higher demand for local honey especially when provided negative information of international honey. It might also explain why respondents in this study purchase Chinese-brand honey much more often than imported honey.

Another reason lied in “Ethnocentrism”, which was defined as “Beliefs held by consumers about the appropriateness, indeed morality, of purchasing foreign made products” (Shimp & Sharma, 1987). For example, one research found that historical animosity between China and Japan might lead to differing attitudes towards products imported from Japan and other countries (Gabrielle, Ettenson, & Morris, 1998).

5.1.3 Consumer knowledge and familiarity with label and beekeeping

Consumers participated in the survey have relatively high level of subjective knowledge and medium level of objective knowledge. Approximately half of the respondents had seen the label yet they did not understand the label completely and correctly. And a large proportion of the respondents claimed that they were familiar with bee keeping. An interesting result was that respondents were prone to have higher subjective knowledge level when they were familiar with bee keeping while their objective knowledge level was not significantly different with the other group. To summarize, respondents actually were not as knowledgeable as they believed.

Consumer knowledge affected purchasing behaviour in many aspects and served important function for marketing strategy development (Ellis, 2015). Thereby, the discussion of knowledge would be further integrated with determinants of purchase intentions as well as consumer segmentations.

¹² Imported honey quality issues reports (in Chinese) from:
China Quality News website: http://www.cqn.com.cn/xfzn/content/2017-07/28/content_4641186.htm
China Honey Website: <https://www.fmw.com.cn/zhishi/4051.html>

5.1.4 Determinants of purchase intention

Attitudes, subjective norms, perceived behaviour control, health consciousness, trust, awareness of possible issues were important factors predicting purchase intentions of different types of honey.

First of all, original TPB variable attitudes, subjective norms and perceived behaviour control frequently appeared as important predictors, which once again confirmed that TPB was a reliable model predicting social behaviours (Ajzen, 2011). Trust, awareness of possible issues with honey and health consciousness appeared also frequently. Trust was also proven to affect purchase intention of honey in Italy (Menozzi et al., 2015). The health consciousness verified again the characteristics of Chinese food consumers that they were rather health-conscious (Chung et al., 2012; Liu et al., 2013). The importance of awareness of possible issues with honey might be explained in the opposite way. The higher the purchase intention implied higher involvement in honey purchase and then lead to higher awareness of potential issues. Also, awareness of possible issues with honey in general do not necessarily apply to the honey that they intend to purchase.

Subjective knowledge specifically influenced on purchase intention of EU honey while objective knowledge did not influence on any type of purchase intention. Probably, it was due to the reason that objective knowledge was driven by socio-demographic antecedents such as age, gender, education and income. But subjective knowledge was largely affected by consumption experiences and opinion leadership (Ellis, 2015). Likewise, a study focusing on Swedish consumers had similar findings that it was subjective knowledge rather than objective knowledge that had significant correlation with amount of green purchases (Gunne & Matto, 2017).

5.1.5 Profiles of heavy, medium and light honey users

The heavy, medium, and light users were different in terms of socio-demographic characteristics. Heavy users had higher percentage of respondents married or cohabiting with partners and with children. Another major difference between heavy users and the rest two groups was their perceived image, purchase intention and purchase frequency of EU honey. Heavy users also had higher subjective knowledge, awareness of possible issues. These two factors were also important predictors of honey purchase intention. Thereby, increasing their subjective knowledge might be a way to transform light and medium honey users to heavy users.

Other studies have also classified honey consumers into different segments. Italian honey consumers were divided into four segments and they had heterogeneous preferences towards honey. For example, the first segment particularly concerned only the local origins of honey (Cosmina et al., 2016). Irish honey consumers were identified as three segments. The three segments were different in terms of scale of honey producer and price and they were also different regarding socio-demographic characteristics (Murphy et al., 2000). Romanian consumers were also investigated by segmentation. The difference of segments lied major in ages, number of children, marital status and purchase frequencies, locations, consumption and etc (Arvqnitoyannis & Krystallis, 2010).

5.2 Practical Implications

The results yield recommendations for public interventions and private marketing strategy development in the county and other similar regions.

5.2.1 Implications for public sectors

The county government currently focuses on supporting the development of local honey products enterprises. The government should not neglect the prevalence of honey directly sold by producers. Consumers in the county would purchase most often from local bee keepers and they had the most positive image of honey from local bee keeper. Such information should be conveyed to the local producers so that they would be well informed of the market performance of their products. Additionally, the government pointed out the local bee industry was challenged by the fact of aging bee keeper. If the market potential would be widely communicated, young people might be attracted to the bee keeping sector. In 2017, Chinese authorities outlined a major task of rural vitalization strategy aimed at tackling issues related to agriculture and fostering rural development¹³. Other cities with rich apiculture resources could also take full advantage of the strong consumer interests to assist apiculture development, which is an unignorable part of rural vitalization.

The honey label developed by China Bee Product Association was investigated in the research as well. It seemed that label did not penetrate into small cities like Tonglu. Only half of the respondents had seen the label before and they did not have a correct understanding of the label. Label is an important information source for consumers.

¹³ The information could be found in authorized media like Xinhua News:
http://www.xinhuanet.com/english/2017-12/29/c_136860275_2.htm

Particularly, information source from authorities received a higher level of trust (L. Wu et al., 2011; Xu et al., 2012). In this sense, the association needs to put more efforts in promoting the label and help consumers to understand the label correctly.

5.2.2 Implications for private sectors

There are some suggestions for private enterprises as well. First of all, companies in China or abroad could increasing consumers' honey usage by improving their subjective knowledge. The socio-demographic characteristics of light and medium users are that they are mostly not married or cohabiting and they are also mostly without children. Compared to heavy users, they also have lower level of subjective knowledge and purchase frequency. And they have relatively negative image of EU honey. Therefore, honey enterprises from EU should pay attention to light and medium users.

Secondly, all of the companies need to pay attention to factors influence on honey purchase intention and that they can work on, such as consumer attitudes, health consciousness, and trust. Emphasizing health benefits and developing consumer trust would increase their purchase intention of honey. With regards to EU honey, exporters need to specifically focused on young people, and people with children. Besides, subjective knowledge also increases the purchase intention of EU honey. Since the group of respondents familiar with bee keeping tended to have higher subjective knowledge, the foreign companies could communicate with consumers more about beekeeping. Last but not the least, they need to improve the image of EU honey in small cities like Tonglu County.

Thirdly, enterprises should note that consumers use honey for a variety of purposes. Developing various honey products to satisfy such diverse needs could potentially attract new consumers and increase their level of use. It is also necessary for them to make a full use of new sales platform such as online shops. It was found in this survey, consumers purchased online frequently. And the white paper also emphasized the growing trend of consumers purchasing honey online. Previous studies indicated honey industry must adjust their strategy to acquisition characteristics and consumption behaviour of honey consumers (Pocol, 2011). Therefore, enterprises need to pay attention to the averagely low purchase frequency, preference towards liquid honey, and indifference between monofloral and polyfloral honey of consumers.

5.3 Limitation and further recommendations for future research

There were several limitations in this study and recommendations for future research.

One of the limitations pertains to the data collection. The sample was skewed to young people because of the data collection methods. The percentage of respondents who were older than 50 years old was 2.1%. Nevertheless, 23.3% of the population are people older than 60 in 2017 in the county. Hence, it is recommended to the future research to also include the elders into the consumer studies. On the other hand, the sample was collected only in one small city. The results should not be generalized the results in this study to big cities and other regions. Although it to some extent represented small counties with huge honey production in this region.

Another limitation lied in the TPB variables selection. For example, ethnocentrism is a potential explanation of the most positive image of honey from local bee keeper. There are a group of papers claiming that Chinese consumers support domestic products compared with imported products (Croll, 2006; Prasso & Indian, 2007). Some argued that Chinese consumers generally have a preference to local products in terms of fast moving consumers goods (Kwok, Uncles, & Huang, 2006). Therefore, it would be interesting to include ethnocentrism into future TPB model to model the honey consumer behaviour. Moreover, Chinese consumers in big cities tended to have low ethnocentrism toward imported products particularly when exposed to foreign products (Hsu & Nien, 2008). Therefore, comparing honey consumers in metropolises such as Shanghai, Beijing and in small cities such as Tonglu County may yield meaningful results.

Thirdly, this study did not account for the emerging altruism among Chinese consumers. Environment, ecology values, and benefits of others have been gradually taken into consideration by Chinese consumers during their purchase decision. Environmental values, for example, can promote green food consumption (Q. Zhu, Li, Geng, & Qi, 2013). Thøgersen and Zhou confirmed that environmental benefits strongly influenced Chinese consumers' attitude towards buying organic food (Thøgersen & Zhou, 2012). Thus, another recommendation for future research is to include altruism as an important part of honey consumers assessment.

In the end, the study was based on web-based questionnaire survey. Since there were no real honey products presented to respondents, consumers might have different

contexts in their mind. Another limitation was that the reliability of the results relied heavily on the authenticity of self-reported data, which might be influenced by the social desirability bias. Consequently, there are two more suggestions. The first one is that experimental studies such as experimental auctions are recommended for future research, owing to the advantages of real purchase settings and that do not count on self-reported data.

Chapter 6: Conclusion

The study explored honey purchase and consumption patterns. Further, it investigated consumer knowledge, familiarity with honey label and familiarity with bee keeping. Also, it described consumers' images of Chinese-brand honey, honey from local bee keepers and honey imported from EU. Regression analysis successfully identified factors influencing purchase intention of different types of honey. Finally, consumers were segmented based on light, medium and heavy honey users with their characteristics described. Results indicated that public sectors should endeavor to support local bee keepers as well as the local bee products companies, because consumers had the most positive image of honey from local bee keeper and they would purchase the most frequently from them. It is also suggested for China Bee Product Association to continue promoting their honey label to increase consumers' awareness and improve understanding. Finally, enterprises are recommended to increase consumers' honey usage and factors influencing honey purchase intention. For example, they should further develop trust of consumers. The results also inform and encourage the enterprises to develop innovative products that satisfy diverse consumer needs, and to exploit the growing trends like online shopping.

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Appendices:

a. Questionnaire

We would like to invite you to participate in a survey trying to discover the attitudes and intentions of honey consumers in China. It is an important part of our master dissertation project at Ghent University, Belgium. Please read each question carefully and answer it to the best of your ability. There are no correct or incorrect responses; we are merely interested in your personal point of view. The survey is anonymous. Responses to this survey are completely confidential. Thank you for your collaboration!

我们诚邀您参与我们关于中国蜂蜜消费者态度和意图的问卷调查。这项问卷调查是比利时根特大学硕士论文项目的重要部分。请您认真阅读每一个题项，并尽最大能力回答。每个题项没有正确或错误的答案，我们只对您的个人观点感兴趣。本研究是匿名的，我们会对所有的信息和回答严格保密。最后，感谢您的合作！

Instructions: many questions in this survey make use of rating scales with 5 possible scores.

You are asked to choose the number that best describes your opinion. For example, if you are asked to rate "The weather in Beijing" on such a scale, the 5 possible scores should be interpreted as follows.

If you strongly agree that the weather in Beijing is good, you can choose 5. And if you just agree, you can choose 4. But if you are not sure, you can choose 3. Similarly, if you feel disagree you can choose 2. Finally, if you strongly disagree, you choose 1.

引导：本问卷中很多问题会用五级量表，您可以选择最能表达您观点的数字。例如下题，您需要选择一个数字来表达您对“北京天气很好”这一表述的观点。根据您对这一表述的同意程度，您可以选择相应数字。从强烈同意(5)，同意(4)，到中立(3)，不同意(2)和强烈不同意(1)。

Example (示例)

	Strongly disagree (强烈不同意)				Strongly agree (强烈同意)
	1	2	3	4	5
Weather in Beijing is good (北京的天气很好)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

After this short introduction and instruction, the questions below are the content of this questionnaire. Please answer it carefully.

示例之后的问题是本问卷的正式内容，请认真回答。

How often (how frequent) do you purchase honey (您购买蜂蜜的频率是)

- Everyday or almost everyday (每天或者几乎每天)
- Several times a week (一周几次)
- Once a week (一周一次)
- Several times a month (一月几次)
- Once a month (一月一次)
- Every two months (每两个月一次)
- Every three or four months (每三四个月一次)
- Twice a year (一年两次)
- Once a year (一年一次)
- Never (从不)

Out of 10 times that you purchase honey, how many time do you purchase honey at the following shops or places (your total score over the items should be 10) (一共十次购买蜂蜜，您在下列场所购买蜂蜜的次数是，注意：购买次数的总和是10)

Honey special shop (蜂蜜专卖店)	0
Local bee keeper (当地蜂农)	0
Supermarket (超市)	0
Online store (网店)	0
总计	0

Out of 10 times that you purchase honey, how many times do you purchase the following types of honey (your total score over the types of honey should be 10) (一共十次购买蜂蜜，您几次购买下列类型蜂蜜，注意：购买次数的总和是10)

Imported honey from European Union (EU) countries or regions (欧盟地区进口蜂蜜)	0
Imported honey from other regions of the world (not China and not EU honey) (其他非欧盟地区进口的蜂蜜)	0
Chinese-brand honey (国产蜂蜜)	0
总计	0

Out of 10 times that you purchase honey, how many times do you purchase the following types of honey (your total score over the types of honey should be 10) (一共十次购买蜂蜜，您购买下列蜂蜜的次数是，注意：购买次数的总和是10)

Liquid honey (液态蜂蜜)

Solid honey (固态蜂蜜)

总计

Out of 10 times that you purchase honey, how many times do you purchase the following types of honey (your total score over the types of honey should be 10) (一共十次购买蜂蜜，您购买下列蜂蜜的次数是，注意：购买次数的总和是10)

Polyfloral honey (this is honey from a mix of different flowers) (杂花蜜)

Monofloral honey (this is honey from one specific flower) (单花蜜)

总计

Have you ever purchased comb honey (您是否购买过蜂巢蜜)

Yes (是)

No (否)

Out of 2 weeks (or 14 days), how many days on average do you eat, drink, or use honey (两周也即14天内，您平均食用，饮用或者使用蜂蜜的天数是)，0 = Never (从不)，14 = Every day (每天)

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Frequency (频率)



In what quantity do you typically eat, drink or use honey at one eating occasion (only one answer is possible) (您吃一次蜂蜜的时候吃多少量？您只能选择一个选项)

Tea spoon (一茶匙)

Table spoon (一汤匙)

Small portion of around 30 g (一小份约30克)

Larger portion of 50 g or more (一份约50克)

Out of 2 weeks (14 days), how often do you eat, drink, or use honey for the following purposes (两周也即14天内, 您为了下列目的使用蜂蜜的频率是)

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

As a natural food sweetener (天然食品甜味剂)



As a medicine (药用)



As a beauty or cosmetic product (美容护肤)



Eaten as table honey (作为纯蜂蜜食用)



As a health supplement (保健品)



As a cooking ingredient (烹饪调料)



In my opinion, **Chinese-brand honey** is (在我看来, **国产品牌蜂蜜**)

	Strongly disagree (强烈不同意)				Strongly agree (强烈同意)
	1	2	3	4	5
Trustworthy (可信赖的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Free of hazards (无公害的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environment-friendly (环境友好的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Safe (安全的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Affordable (买得起的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Healthy (健康的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tasty (美味的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High value for money (高性价比的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sustainable (可持续的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Authentic (=real) (正宗的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In my opinion, **honey from a local beekeeper** is (在我看来, **本地土蜂蜜**)

	Strongly disagree (强烈不同意)			Strongly agree (强烈同意)	
	1	2	3	4	5
Healthy (健康的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environment-friendly (环境友好的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Free of hazards (无公 害的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Safe (安全的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High value for money (高性价比的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tasty (美味的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sustainable (可持续 的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trustworthy (可信赖 的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Authentic (=real) (正宗 的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Affordable (买得起的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In my opinion, **honey imported from the European Union (EU)** is (在我看来, **欧盟进口蜂蜜**)

	Strongly disagree (强烈不同意)			Strongly agree (强烈同意)		
	1	2	3	4	5	
High value for money (高性价比的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Tasty (美味的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Authentic (=real) (正宗的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Affordable (买得起的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Healthy (健康的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Safe (安全的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Sustainable (可持续的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Free of hazards (无公害的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Environment-friendly (环境友好的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Trustworthy (可信赖的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

In my opinion, **honey in general** is (在我看来, **蜂蜜总体上是**)

Rather bad (有点坏)	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Rather good (有点好)
Rather negative (有点消极)	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Rather positive (有点积极)
Rather unsafe (有点不安全)	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Rather safe (有点安全)
Rather expensive (有点贵)	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Rather cheap (有点便宜)

I purchase honey, because (我买蜂蜜是因为)

	Strongly disagree (强烈不同意)				Strongly agree (强烈同意)	
	1	2	3	4	5	
My family, my partner or my friends encourage me to buy (我的家人, 伴侣和朋友鼓励我买)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Doctors and nutritionists encourage me to buy (医生和营养师鼓励我买)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
People important to me also buy it (对我很重要的人也买)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Media information encourages me to buy (媒体信息很正面)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

I purchase honey, because (我买蜂蜜是因为)

	Strongly disagree (强烈不同意)				Strongly agree (强烈同意)	
	1	2	3	4	5	
I am used to buy honey (我习惯买蜂蜜了)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
I have enough time (我有充足时间)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
It is easy to access honey (获取它很容易)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
I have enough budget (我有足够预算)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
It doesn't need help from others (不需要别人帮助)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

Next time I purchase honey, I intend to buy (下次买蜂蜜, 我打算买)

	Strongly disagree (强烈不同意)				Strongly agree (强烈同意)	
	1	2	3	4	5	
Honey from local beekeepers (本地土蜂 蜜)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Chinese-brand honey (国产品牌蜂蜜)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Honey imported from the European Union (EU) (欧盟进口蜂蜜)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

I recommend others to buy (我推荐他人买)

	Strongly disagree (强烈不同意)				Strongly agree (强烈同意)	
	1	2	3	4	5	
Honey from local beekeepers (本地土蜂 蜜)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Chinese-brand honey (国产品牌蜂蜜)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Honey imported from the European Union (EU) (欧盟进口蜂蜜)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

To what extent, do you believe that honey can be / can contain (在何种程度上, 您相信蜂蜜是/含有)

	Strongly disagree (强烈不同意)			Strongly agree (强烈同意)	
	1	2	3	4	5
Pesticide residues (农药残留)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Antibiotics residues (抗生素残留)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
False botanical (flower type) origin (误报蜜源花类型)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adulterated (掺假的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Artificial sugars (人造甜味剂)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
False geographical origin (误报产地)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Natural toxins (天然毒素)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I trust ... (我相信)

	Strongly disagree (强烈不同意)				Strongly agree (强烈同意)
	1	2	3	4	5
That honey is safe (蜂蜜是安全的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
That honey is of good quality (蜂蜜是好品质的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
That the producer and processor obey legal standards (蜂蜜生产者和加工者遵守一定标准)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The information on honey packaging is true (蜂蜜包装上的信息是真实的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I think that ... (我认为)

	Strongly disagree (强烈不同意)				Strongly agree (强烈同意)
	1	2	3	4	5
Compared with others, I know a lot about honey (和其他人相比, 我知道很多蜂蜜知识)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My friends consider me as an expert about honey (我朋友认为我是蜂蜜方面专家)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate whether you think the following statements are true or false (您认为下列表述是正确还是错误的? 请选择)

	True (对)	False (错)
All honey is organic (所有的蜂蜜都是有机的)	<input type="radio"/>	<input type="radio"/>
Honey is a source of minerals (蜂蜜是矿物质来源)	<input type="radio"/>	<input type="radio"/>
Honey contains enzymes (蜂蜜中含有酶)	<input type="radio"/>	<input type="radio"/>
Honey is a source of proteins (蜂蜜是蛋白质来源)	<input type="radio"/>	<input type="radio"/>
Honey is a source of energy (蜂蜜是能量来源)	<input type="radio"/>	<input type="radio"/>
Honey is a source of vitamins (蜂蜜是维生素来源)	<input type="radio"/>	<input type="radio"/>
If honey is crystalized, it means sugar has been added to it (如果蜂蜜结晶, 说明蜂蜜中加了糖)	<input type="radio"/>	<input type="radio"/>

Have you ever seen the following label (您是否见过下列标签)



Yes (是)

No (否)

To what extent, do you think that the label indicates honey with this label is (在何种程度上, 您认为这个标签表示带标签蜂蜜是)

	Strongly disagree (强烈不同意)				Strongly agree (强烈同意)	
	1	2	3	4	5	
Traceable (可追溯的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Better quality (品质更好的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Controlled quality (品质可控的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Better taste (口味更好)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Authentic (=real) (正宗的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Organic (有机的)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

To what extent do you agree or disagree with the following statements (在何种程度上您认同或者不认同下列表述)

	Strongly disagree (强烈不同意)				Strongly agree (强烈同意)	
	1	2	3	4	5	
I always follow a healthy and balanced diet (我总是保持一个健康和均衡的饮食)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
I am very particular about the healthiness of the food I eat (我对我吃的食物的健康程度十分关注)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
I avoid foods that are bad for my health (我避免吃的对我健康不好的食物)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

Gender (性别)

- Male (男)
 Female (女)
-

What is your age (in years) (年龄)

Are you married or cohabiting (您是否已婚或者同居)

- Yes (是)
 No (否)
-

How many people live in your household (household size) (家庭人数)

Do you have children (您是否有孩子)

- Yes (是)
 No (否)
-

The number of your children is (您有几个孩子)

The age of your youngest child is (in years) (您最小孩子的年纪是)

Education (教育水平)

- Primary education or less (小学及以下)
 - Secondary education (初高中水平)
 - Vocational education (职业技术学校)
 - Bachelor (大学本科)
 - Master or PhD (研究生及以上)
-

What is your annual gross income RMB (税前年收入, 人民币)

- < 10000
 - 10001 - 30000
 - 30001 - 60000
 - 60001 - 90000
 - 90001 - 150000
 - 150001 - 300000
 - > 300000
-

To what extent are you familiar with honeybee keeping (您对养蜂业的了解程度是)

- Not at all (一点也不了解)
- Somebody I personally know (such as a friend, family or neighbor) is a beekeeper (我有认识的人, 比如家人朋友是养蜂的)
- I am a beekeeper myself (我自己就是养蜂人)