# ANALYSIS OF MAIN INFLUENCING FACTORS OF MARKET SHARE OF ORGANIC AGRICULTURAL PRODUCTS

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## Abstract


Title: Analysis of Main Influencing Factors of Market Share of Organic Agricultural Products

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In recent years, with the rapid social and economic development, improvement of living standards, the living demands on quality of life of consumers are increasing. Also, consumers pay more attention on food safety with the growing food safety issues. Organic concept is gradually accepted by people, and the organic agricultural products and organic agricultural are also recognized which brings the constant growth of demands of organic products.

The current study aimed at the factors which affected consumption of organic agricultural products, based on the previous related studies, and focused on organic fruits and vegetables consumption. The consumers in Beijing and Tianjin are subjects of the study.Two-factor theory of Del Hawkins is used, the consuming behaviors of this region are investigated, and the factors which dominate organic fruits and vegetables consumption of consumers are analyzed. SPSS Statistics v23 is utilized in the study, and the methods of analysis include descriptive statistical analysis, factor analysis and Logistic regression analysis.

The study found that in many factors which affects consumers, from the viewpoint of consumers and the knowledge of organic fruits and vegetables are most

influential on consumption; the second one is personal and family factors of consumers， and among these factors, income level is most representative; price, purchase ways, purchase status and purchase purpose are not significant related on consuming behaviors. Thus, in the expansion of organic fruits and vegetables as representative of the market share of organic agricultural products, it is necessary to do more delicate promotions, increase consumers' purchase ability, expand sales channels and market segments, and enhance monitoring of organic agricultural products market.

**Keywords: organic fruits and vegetables, consumers, consuming behavior**

# 摘要


题目: 有机农产品的市场占有率主要影响因素分析

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近年来，随着社会经济的快速发展，生活水平的提高，消费者对生活品质和质量的要求地增加；同时由于食品安全问题的发生，更引起了消费者对食品安全的重视。有机的概念逐渐得到人们的关注，随之发展起来的有机农产品和有机农业得到了大家的逐渐认识和认可，市场对有机产品的需求也不断增长。

本研究针对影响有机农产品消费的因素，在前人的研究基础之上，以有机果蔬的消费情况为例，对北京、天津一线城市经济区消费者为研究对象，使用 Del Hawkins 两因素理论，通过对该区域消费者的消费行为，研究制约有机果蔬消费的原因在哪里。本次研究使 SPSS Statistics v23 软件，分析方法有描述性统计分析、因子分析和 Logistic 回归分析。

研究表明，在影响消费的众多因素中，以消费者的角度观察，和消费者对有机果蔬的认知对消费的影响最显著；其次是消费者的个人和家庭因素对消费的影响，其中收入水平最具代表性；价格因素、购买途径、购买的状态及购买目的对消费行为未呈现显著性。因此在扩大以有机果蔬为代表的有机农产品的市场占有率上，需要对有机农产品的市场认知做更多细致的推广和普及、增加消费者的购买力、拓展销售渠和市场细分、加强有机农产品市场的监管。



**关键词：有机果蔬　消费者　消费行为**

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Lixia Wang

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# CONTENT

# CHAPTER 1

# INTRODUCTION

## 1.1 Research Background and Motivation

With the income growth and improving material living conditions, people's understanding of life gradually change from the basic meals to eat better and start to pay attention to food hygiene and safety, health and nutrition. Organic foods are hence getting popular. Besides, food safety problems happen frequently, consumers have to pay attention to food safety and their own health. Compared to traditional foods, organic foods are getting more and more popular in domestic cities.

Compared to traditional foods, Organic food usually comes from the organic agricultural production system, according to the international organic agricultural production requirements and the corresponding standard production and processing, they are not only forbidden to use pesticides, fertilizers, growth regulators and other chemical substances, but also are allowed to go to the market after passing the professional quality certification. The safety and health are recognized by the consumers, so the organic fruits and vegetables are getting more and more popular.

According to the statistics of World Federation of Organic Sports, the global sales of organic food was up to 63 billion US dollars in 2012, organic food production acreage of 30.4 million hectares, and still maintained a growth rate of 20% each year. China is the world's third largest organic food producer after Australia and Argentina, with a total area of 2.3 million hectares.(World Federation of Organic Sports Websites , 2016)，But the domestic consumption is relatively small, mainly in Beijing, Shanghai, Guangzhou and other first-tier cities, the domestic market share is lower. (Chen Xinjian，2012)

Magistris et al (2008) stated that consumer awareness of organic foods is largely based on their environmentally friendly characteristics and healthier than

conventional foods. There are plenty researches of organic foods knowledge and consuming behaviors. Some researchers are focused on sales models. Some foreign researches are not suitable in domestic strategies due to the cultural differences.（Zhang Lian-gang，2010）

Thus, it is necessary to analyze the factors that influence Chinese consumers to purchase organic foods.

### 1.2 Research Purpose

The study based on the related researches and real consumption of organic agricultural, take the example of Beijing and Tianjin, build the model of consumer purchase process, list the personal factors, concept of organic products, quality, externalities, supply and other aspects of cognitive level and find their relationship with purchase strategies. Use structural equation modeling and analyze factors affecting consumers to buy organic products, we try to find the following issues:

(1) Through the survey of consumption in Beijing and Tianjin to understand the structure of consumer groups and their impact on sales；

(2) To understand the degree of consumer recognition of organic fruits and vegetables, as well as price, sales and other attitudes;

(3) By constructing a theoretical framework that will influence the consumers 'willingness to purchase organic fruits and vegetables, the study discusses the main factors that influence the consumers' willingness to purchase organic fruits and vegetables. Study the main reasons the influence consumer purchase of organic fruits and vegetables;

(4) By the results of the study, we hope to provide reference for the innovation and development planning of organic fruit and vegetable producers and sales。

## 1.3 Research Meaning

The study of influencing factors of organic fruit and vegetable consumption has practical significance in many aspects. On the enterprise development point of view, the organic agricultural products production and sales of two links play an important role and it is related to the rise and fall of a comprehensive enterprise factors.

On the one hand, for the production of organic agricultural products, through the study of the consumption behavior of organic fruits and vegetables, the factors that influence the consumption of the products are found and the enterprises are encouraged to create new and improved existing agricultural products.

On the enterprise sales' part, it is helpful in helping enterprise to make effective market strategies, help enterprises to organize production and business activities according to changes in consumer demand, and improve the effectiveness of marketing activities, enhance market competitiveness, effective market segmentation, advertising, packaging, trademarks, prices and retail channels to reduce waste of resources。

This study will play an active role in understanding consumer demand for organic agricultural products.

In general, through the study of the factors influencing consumers' purchase of organic fruits and vegetables, on the one hand, the development of organic agricultural enterprises will play a certain role. On the other hand, a deeper understanding of the actual situation of consumers' cognition, purchase intention and purchase behavior of organic agricultural products, promoting the development of organic agricultural products market and raising the consumers' understanding of relevant policies on organic agricultural products. Organic agricultural products manufacturers, vendors play a guiding role, so that it can effectively meet the consumer demand for organic agricultural products, in addition, more abundant

organic agricultural consumption theories and empirical researches will be helpful in real practice.

## 1.4 Research Framework

The research frame is illustrated as Figure 1-1:

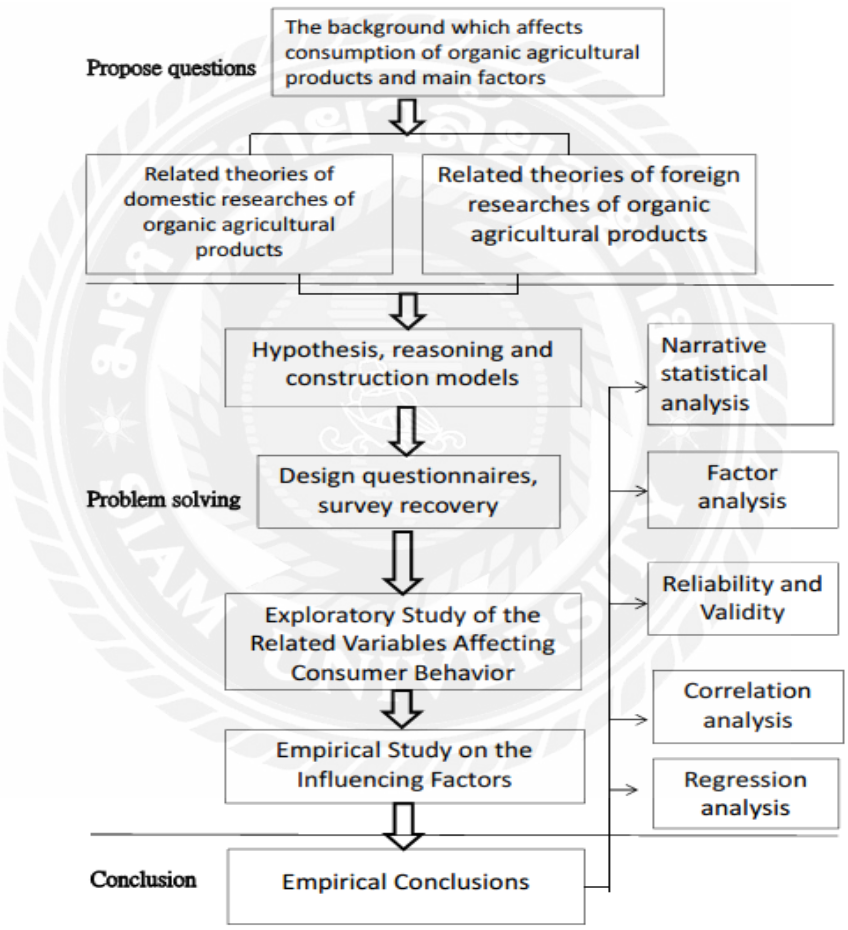



Figure 1-1 research framework

# CHAPTER 2

# LITERATURE

## 2.1 Definition and Development of Organic Agricultural Products

### 2.1.1 What is Organic Agricultural Product?

In this study, organic fruits and vegetables as are the objects, and they are members of organic agricultural products. The organic agriculture will be introduced and the following are organic agricultural products and organic food.

First, what is organic agriculture? Organic agriculture is in accordance with a certain organic agriculture production standards, in the production without the use of genetically engineered organisms and their products, do not use chemical synthesis of pesticides, fertilizers, growth regulators, feed additives and other substances and follow the laws of nature and ecology. A balanced agricultural and aquaculture industry balance, the use of a series of sustainable development of agricultural technology to maintain sustained and stable agricultural production system of an agricultural production. According to the principle of organic agriculture, it is mainly the use of biological cycle of the chain of production, rather than the use of agricultural energy (fertilizers, pesticides, production regulators and additives, etc.) to influence and change the energy cycle of agriculture. Organic agriculture is the high-end goal of agricultural development, and so far, it is the development of low-carbon economy, to achieve sustainable development of agricultural strategic choice.

Secondly, what are organic agricultural products? Organic agricultural products are produced and processed according to the principles of organic agriculture and organic agricultural products production methods and standards. They are certified by the organic food certification authority, and also called ecological or biological food (Xinhui, 2012) Therefore, organic agricultural products are pure

natural, non-polluting, high-quality, high-quality, safe and nutritious food. They are different from other agricultural products in three aspects:

(1) In the production process of organic agricultural products, the use of pesticides, fertilizers, hormones and other synthetic substances are prohibited. The use of genetic engineering technology is also not allowed. Other agricultural products are allowed the limited use of these substances, and the use of genetic engineering techniques is not prohibited.

(2) The land production transition of organic agricultural products has strict rules. Considering that certain substances will remain in the environment for a considerable period of time, the conversion of land from the production of other agricultural products to the production of organic agricultural products takes two to three years, while the production of green agricultural products and pollution-free agricultural products does not require land conversion.

(3) The number of organic agricultural products is strictly controlled, and the requirements of the land, set production, other agricultural products do not have such stringent requirements.

Organic products include organic cereals, organic fruits, organic vegetables, organic tea products, organic edible fungus products, organic livestock and poultry products, organic aquatic products, organic bee products, and organic milk powder. In the market, common organic agricultural products are mainly vegetables, fruits, grains, rice, and tea and so on.

Finally, what is organic food? The foods produced by the organic agricultural products as raw materials are called organic food.

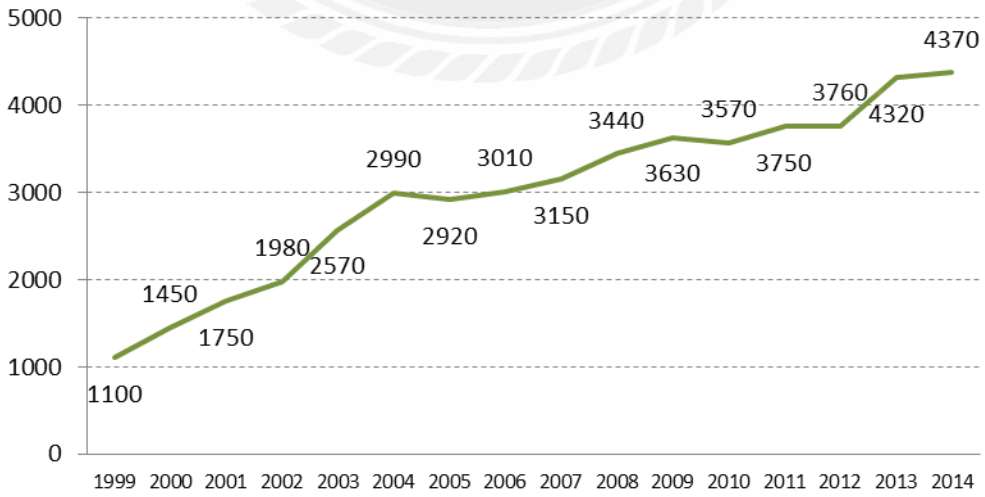
In this study, organic fruits and vegetables which are commonly used in daily consumption were the research objects.

### 2.1.2 Developing Status of Organic Agricultural Products

According to the IFOAM International Organic Federation (IFOAM-OI) and

the Swiss Organic Agriculture Institute (FIBL), the organic industry development in Statistical Yearbook of 2016 (The World of Organic Agriculture) shows that to the end of 2014, organic agriculture mode of production has been promoted in 172 countries, organic agriculture area and number of growers increased year by year, and the global organic way to manage the farmland area of 43.7 million hectares (Including land in the conversion period，Figure 2-1). Two of the largest organic agricultural areas are Oceania (17.3 million hectares, representing 40 percent of the world's organic agricultural land) and Europe (11.6 million hectares, 27 percent); the three largest organic agricultural areas are Australia (17.2 million hectares), Argentina (3.1 million hectares) and the United States (2.2 million hectares); China's organic agricultural area is the fourth of the world. The organic market is expanding not only in Europe and North America (the world's largest organic market), but also in a number of other developing countries, with about 1% of farmers in Western Europe and the United States engaged in organic farming. Organic farms are throughout the country. (Organic Farm Management System，2016, the Swiss Organic Agriculture Institute (FIBL)，2016)

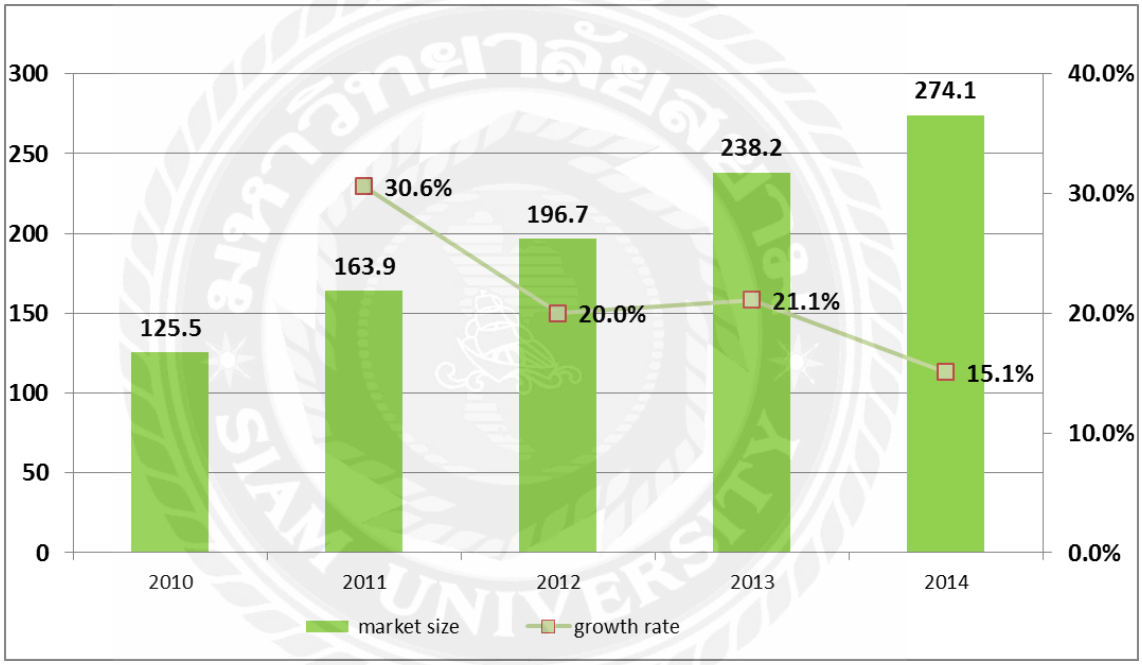
**Figure 2-1**



China's organic agriculture started in the 90's of last century. From the 2003 "Certification and Accreditation Ordinance" promulgation and implementation of the end of 2014, the country's access to organic products certified more than 5,000 enterprises, organic product certification area of 2.6 million hectares or more, and sales of 27.41 billion yuan. China's organic agriculture production area was the first in Asia, ranked fourth in the world.

**Figure 2-2**

**(100 million)**




**2010-2014 China's organic agricultural products market size and growth trend**

## 2.2 Domestic Researches of Organic Agricultural Products

Compared with the developed countries, China's organic agriculture development started later. In 2001, the State Environmental Protection Administration issued the "organic food technical specifications", and in 2004, State Administration of Quality Supervision issued "organic product certification management approach". A series of regulations promulgated and implemented marks the development of China's organic agriculture on the right track。

He Kuan（2004）considered that there is a great potential market development in organic agricultural products in China. Existing problems and suggestions in the producing and consuming process are proposed. Through the study of the relationship among farmers, enterprises and government, it is pointed out that large-scale agricultural leading enterprises can promote the development of organic agriculture.

Ye Yan（2007）used the legit model and concluded that organic food products are not properly understood. The recognition degree of organic tea is not high, which shows that consumer's concern about food safety is generally high, but the basic concept of organic agricultural products is not fully understood. In addition, the factors such as gender and educational level were found to have significant differences in the purchase of organic tea among consumers.

Fan Wu-Bo et al（2009）studied and expounded the present supply and demand of organic agricultural products market in our country, and analyzed the problems in depth. Furthermore, they predicted the development of organic agricultural products market in China and put forward that organic agricultural products in our country have great market development potential。

Zheng Bailong（2009）introduced the development course of organic agricultural products in Taiwan. The organic agricultural products sales model has certain inspiration to the development of organic agricultural products in China mainland.

Zheng Yimin(2009) investigated the understanding of organic agricultural products consumers, and the results show that consumers have a higher awareness of the organic agricultural products, but lack of organic agricultural products in-depth understanding.

Wang Xia et al (2009) investigated organic agricultural products market and consumers' cognition of organic agricultural products in supermarkets in Nanjing. The results show that although some consumers have positive awareness of organic

agricultural products, but very few consumers have organic agricultural products purchase experience. This indicated that the consumer purchasing power of organic agricultural products is still insufficient, and the concern for organic agricultural products is still not high.

Pu Shizhen et al（2010）proposed that the concern about food safety, nutrition and health of the consumer concept has been deeply rooted in people’s heart. Development of organic agriculture to meet consumer demand for safe and healthy nutrition has become the world's agricultural development trend.

Wang Yunhao（2010）stated the development process problems of China's organic agriculture, including the regional development imbalance, the brand influence is not high, and development blindness of organic agricultural products. Some corresponding improvement suggestions are also proposed.

Zhou Xubao et al（2010）studied the development of organic food in Beijing and proposed ecological compensation, the development of professional cooperatives and other measures to promote the rapid development of organic agricultural products.

Chen Dingchun（2011）said that since 2003, organic products sales in China rose about 30% per year, and the sale of 2015 of organic agricultural products was estimated.

Jiang Lijian (2012) suggested the improvement of the quality of agricultural products and importance of raising farmers’ income. Further suggestions are also proposed.

Yin Shijiu (2013) said that the importance of age, price and the necessity of certification have a significant impact on the purchasing experience. Family structure and health consciousness have a significant effect on purchasing intensity. And income, food safety awareness, trust and ease of purchase have a significant impact on two-level decision making.

## 2.3 Foreign Researches of Organic Agricultural Products

Organic agricultural products development in other countries is faster in China, and organic agricultural products of the relevant researches are more systematic and abundant.

Ekelund (1998) indicated that organic agricultural product have its own unique properties, and most consumers are interested at organic agricultural products and are willing to purchase.

Grankvist et al (2001) said that most consumers consider organic foods are healthier, and 46%-67% of the subjects have positive attitude toward organic foods.

Magnusson et al (2001) stated that 46%-67% of the consumers have positive attitude toward organic foods, but only 4%-10% of consumers are willing to purchase.

Larocheetal（2001)found married women who are raising children have a greater impact on organic agricultural products' purchase willingness.

Reisch（2002) proposed a social survey of consumers in Germany and showed that about 70% of consumers are interested in organic food, and they think organic food is healthier. 40% of consumers believe that organic food taste better.

Magnusson et al(2003) said that family structure and health and environmental factors play great impact on choosing organic agricultural products.

Fotopoulosetal (2003) pointed out in the survey that in Greece and Italy, more consumers are concerned about the organic food to bring them an enjoyable diet.

Padel et al. (2005) analyzed the major influencing factors for the purchase of organic vegetables in the UK by means of a pathway approach and a group discussion and found the main reason is health.

Durham et al (2005) found that the main factors influencing consumers to buy organic agricultural products are environmental factors and health factors, among which environmental factors are more significant.

Birgit Roitner-Schobesberger (2008) indicated that the Thai people began to consume organic agricultural products in order to make their children grow up healthier. Most consumers are with higher education and higher income levels;

MetteWieretal（2008)pointed out in the study that Most consumers in Europe buy organic agricultural products mainly for health and nutrition, but in Germany and Denmark, consumers buy organic agricultural products are more out of the environment friendly. Altruistic consumers have a very high intention to pay for organic agricultural products, i.e. consumers are willing to pay higher prices for environmental protection and animal welfare.

Samantha Smith et al(2010) analyzed that price, awareness, health, environmental awareness, family structure and other factors have an impact on consumption，more concerns on health and environmental protection, and the increase of the purchase willingness;

Ulf Helmar（2011）pointed out after research and analysis that clearly visible labels, health and environmental protection, ethics and political factors have a certain impact on consumers to buy organic agricultural products. In addition, whether there are children at home is an important factor for the purchase of organic agricultural products.

Katrin Zander et al(2012) showed that the ethical attributes in some European countries have a significant impact on the purchase of organic agricultural products.

The theories above may not be mature or comprehensive, but they provide a valuable reference for future research, which laid a solid foundation for our later researches. Several theoretical models which influence consumers' behaviors are discussed as follows:

(1)Theoretical model of Del Hawkins

Theoretical model of Del Hawkins (1996) emphasized that Consumer behavior is a decision-making process in a certain context: "understanding the

problem - to collect information - evaluation options - shop selection and purchase - after-purchase activities". In this process, consumers are mainly affected by external factors and internal factors. These two types of factors of the mechanism are: by affecting the consumer's self-concept and way of life so that consumers generate needs and desires, and thus the corresponding decision-making behavior. The effect degree of these two factors is influenced by the experience of consumer behavior and the interaction of two factors.

(2) Theoretical model of Roger Blackwell

Blackwell (1996) constructed two theoretical models, but there are some differences.

The first model is a simplified model of consumer behavior. The model describes consumer behavior as a process of three consecutive stages of acquisition, consumption, and disposition. The three stages of the decision-making issues are made specific. In this process, the factors that affect consumer behavior are also two categories. But unlike Del Hawkins, Roger Blackwell categorizes external and internal factors as "consumer impact" factors, while emphasizing the marketing influencing factors of external factors as "organizational influences". "Organizational influence" factor and "consumer influence" factors constitute two major factors affecting consumer behavior.

The second model is the embodiment of the first model. This model further expands the process of obtaining, consuming and disposing consumer behavior into a seven-stage consumer decision-making process. The factors of "the influence of the organization" are condensed into a "stimulating factor" which produces the effect, and the original "consumer influence" factor is divided into the factors of "environmental influence" and "individual difference".

(3)Theoretical model of Frank Kardes

The theoretical model of Frank Kardes (2003) is simpler. He interprets consumer behavior as an emotional, cognitive, and behavioral process. These

reactions are caused by the relevant variables; these variables contain personal variables, environment variables, interactive environment and other variables.

(4) Theoretical model of John Mowen.

The model of John Mowen (2000) revealed an exchange proves. In this process, the realization of the exchange is the result of interaction between the two sides. In this interaction, buyers and sellers are affected by the environment. The marketers will take the initiative action through environmental analysis and market research to have certain influence on environmental impact. By doing so, the developed strategies can promote the realization of exchange. Buyers would make decisions of to buy or not to buy under the consideration of environmental factors and marketers' strategies. Mowen emphasized the theory of experience and environmental impact in his book "Consumer Behavior". He believes that the two theories of consumer behavior and traditional decision-making theory are getting more and more attention.

(5) Theoretical model of Mark·E·Parry

Mark·E·Parry's model defined consumer's behavior as process of understanding consumer's values. The realization of the individual value of consumers depends on whether the marketers provide the corresponding benefits. The amount of interest is determined by the various attributes contained in the product. Thus, consumer's purchase behaviors are the balanced conclusion of inner value and outer benefits.

(6) Theoretical model of Philip Kotler

Philip Kotler's consumer model revealed consumer's behavior is a stimulus and response process (1967). In this process, consumers are stimulated by the environment and marketing. On facing stimulation, consumers' different personal characteristics would lead to black box effect. This black box effect is often associated with two major factors: buyer characteristics and decision-making process. The mechanism of these two factors is unknown, so it is called black box, but the

response of consumer is clear. Philip Kotler's another model is about behavioral model of institutional buyers. In this model, institutional buyers are mainly affected by four factors - environmental factors, organizational factors, interpersonal factors and personal factors. Philip Kotler defined behaviors of institutional buyers as the result of four factors instead of black box effect. This means that the behaviors of institutional buyers are more intuitive and transparent.

(7) Theoretical model of Leon Schiffman

Leon Schiffman built two theoretical models in 1978: consumer purchase model and consumer consumption model. The consumer purchase model shows that the consumer purchasing process is an input, process, and output process. In this process, an input factor is the company's marketing behavior and social and cultural environment; these two factors are entered and afterward 'processed'. Processing is the consumer's decision-making process. In this process, it is affect by psychological factors, empirical factors and decision-making process factors. The last output is purchase and evaluation, and this would have great influence on next purchase. The other model emphasizes the process of consumption and becomes the input of this process, which is the purchase. After buying is the process of consumption and ownership; whether this process is good or not would become a result of the output which affects people's feelings, mood, attitude and behavior.

Leon Schiffman's two models reflect the factors of theoretical research influencing consumer behavior are changing from traditional purchase behavior research to consumer behavior research.

The seven theoretical models above have their own strengths but complement each other. All studies of consumer behavior influencing factors provide a strong theoretical guidance and support. They studied the whole process by different variables. Foreign experts and scholars are more inclined to build a variety of models to understand the various factors.

## 2.4 Conclusions

Concluded the researches in table 2-1 and table, factors affecting organic agricultural products are differently illustrated in different countries. Some researches do detailed analysis on factors but lack of considering of cultural background, values and religions. Thus this may not be able to be applied in domestic market. Domestic researches are plenty on the overall development of organic agriculture more. Here are some major studies:

(1) In2009, through the Nanjing Supermarket organic agricultural products consumption survey, this study concluded that the purchasing power of consumers is still insufficient and attention for organic agricultural products is not high;

(2) In 2010, consumer attention on food safety, nutrition and health of the consumer concept has been deeply rooted;

(3) In 2010, there is no significant influence of brands on organic agricultural products.

(4) In, 2013, age, price, evaluation of the need for certification have significant impact; Family structure, health awareness have significant impact; income, food safety awareness, trust and ease of purchase have a significant impact on both levels of decision making.

To sum up, this study will be different from the previous studies. It analyses the factors organic fruit and vegetable consumption behavior and study the reasons affecting consumption.

**Table 2-1**

| Summary of organic agricultural products researches (A) | | | | |
|---|---|---|---|---|
| No. | Year | Author | Research Results | Remarks |
| 1 | 2004 | He Kuan | The market potential of organic agricultural products and indicated that large-scale leading enterprises can promote the development of organic agriculture | |
| 2 | 2007 | Ye Yan | The results of organic tea and common tea are concluded that consumers' attention to food safety is generally high, but the basic concepts of organic agricultural products are not fully enough | |
| 3 | 2009 | Fan Wubo | A prediction of a large market potential on organic agricultural products. | |
| 4 | 2009 | Zheng Bailong | Taking the development and sale of organic agricultural products in Taiwan as an example, the enlightenment of organic agriculture in China | |
| 5 | 2009 | Zheng Yimin | The study of organic agriculture in China, found a high awareness rate, but less in-depth | |
| 6 | 2009 | Wang Xia | Nanjing market situation on organic agricultural products and the knowledge of organic agricultural products of consumers by questionnaire. | |
| 7 | 2010 | Pu Shizhen | Increased attention to food safety, nutrition, health and well-being of consumption, organic agriculture to meet consumer demand | |
| 8 | 2010 | Wang Yunhao | China's agricultural development of agricultural problems, the development of imbalance, brand influence is not high | |
| 9 | 2010 | Zhou Xubao | Taking the development of organic food in Beijing as the background, proposes active ecological compensation and development of professional cooperatives to promote organic agriculture professional development. | |
| 10 | 2011 | Chen Dingchun | Organic agriculture since 2003 rose about 30% per year, the estimated sales in 2015 were estimated | |
| 11 | 2012 | Jiang Li Jian | The development of organic agricultural products for improving the quality of agriculture, improve the important role of farmers' income | |
| 12 | 2013 | Yin Shijiu et al. | Age, price, evaluation of the need for certification have significant impact; Family structure, health awareness have significant impact; income, food safety awareness, trust and ease of purchase have a significant impact on both levels of decision making | |

**Table 2-2**

| Summary of organic agricultural products researches (B) | | | | |
|---|---|---|---|---|
| No. | Year | Author | Research Results | Remarks |
| 1 | 1998 | Ekelund | Most consumers are interested in organic agricultural products, and are also willing to buy. | |
| 2 | 2001 | Grankvist et al | Most consumers think organic foods are safer and healthier. 46%-67% of consumers have positive recognition. | |
| 3 | 2001 | Magnusson | 46%-67% of consumers have positive recognition but only few consumers did the purchase. | |
| 4 | 2001 | Larocheetal | Women who are raising kids are more willing to buy organic food. | |
| 5 | 2002 | Reisch | 70% of Germen consider organic foods are nutritious; 40% consider organic foods taste better. | |
| 6 | 2003 | Magnusson et al | Family structure and environmental health factors play an important role on choosing organic foods. | |
| 7 | 2003 | Fotopouloseta | Consumers in Greece and Italy pay more attention on having an enjoyable diet experience. | |
| 8 | 2005 | Fadel et al | Consumers in UK buy organic foods because of health concern. | |
| 9 | 2005 | Durham et al | Environmental and health factors are main purchase reasons, and environmental factor is particularly important. | |
| 10 | 2008 | Birgit Roitner | Thai people are increasingly concerned about the problem of food residues, family with higher income and educational background do more purchase on organic foods for kids' health. | |
| 11 | 2008 | MetteWieretal | Most European consumers buy organic foods for health and nutrition. Consumers in Germany and Denmark are willing to pay more for environmental protection and animal welfare. | |
| 12 | 2010 | Samantha Smith | Among the factors of age, recognition, environmental concept and family structure, consumers are willing to pay more due to health and environmental factors. | |
| 13 | 2011 | Ulf Hjelmar | Clear labeling, health, environmental, ethical, and political factors all have an impact on organic food purchases. And family with children is one of the reason affect consumer's purchase. | |
| 14 | 2012 | Katrin Zander et al | Animal welfare, environmentally friendly production, fair prices have an impact on the purchase of organic food. On considering these ethical questions, people are more willing to buy organic foods. | |

## 2.5 Factors Affecting Consumption of Organic Fruits and Vegetables

### 2.5.1 What Is Consumption?

The meaning of consumption includes living consumption and production consumption.

(1) Production consumption is production itself;

(2) Living consumption refers to the consumption of certain people's living materials and services to meet the needs of life process; the narrow sense of living consumption refers to the consumption of life.

Our study focuses on the narrow sense of consumption - life consumption, and intake of part of daily life. The main purpose of the study is to discuss thereasons affecting daily consumption of organic fruit and vegetable consumption.

### 2.5.2 The Formation of Consumer Behavior

How consumption is formed?

In the process of consumption, consumption ability is the basis and premise. In this premise, the process of consumption is: needs →information→ comparative evaluation→purchase strategies →consumption

(1) Consumption ability

Consumption ability is the consumer's ability to pay for the required consumer goods and services. It is the basis and premise of consumption needs and affected by the income level and willing to pay. A rational consumer hopes to buy more products with least budget. With the increase of income, the demands for certain products increase as well, and so do expenditures. But rational consumers will not consume more on the same product; they will pursue higher quality alternatives. This is to meet the consumer physical and psychological needs with their increasing income. The price difference of these alternatives is also determined by the consumer's differentiated needs.

(2) Consumption needs

People's desire for consumption is determined by the degree of demand for commodities. Maslow's hierarchy of needs theory divides people's basic needs into five levels: physiological needs, security needs, love and belonging needs, respect and self-actualization (Maslow，1943). Only when people's lowest-level needs are met will produce a higher level of demand. For agricultural products, ordinary agricultural

products can only meet people's physiological needs, to protect people's basic survival; organic agricultural products satisfy demands of higher needs level. This also reflects the people's material needs continue from low to high development process.

(3) Information

Under normal circumstances, consumers should consider what to buy goods, how much money, where to buy and other issues, need to seek information, understanding of commodity information. These include: Product quality, function, price, grade, origin, purchaser's evaluation. Sources of information usually include: 1). business sources;2). personal sources;3). public sources;4). sources of experience.

(4) Comparative evaluation

The purpose of the comparative evaluation of consumers is to be able to identify which goods are most suitable to their needs. This is often based on the collected information to value the goods. Consumers value product attributes due to different reasons, some evaluation-oriented price, and some focus on quality, and some focus on grades or patterns, etc.

(5) Purchase strategies

Consumers make evaluation through the choice of goods, and make a choice, it forms the purchase intention. Under normal circumstances, consumers usually buy their favorite brands. But sometimes they change the purchase decision by the impact of two factors.

1) People’s attitudes;

2) Accidents. A consumer's decision to modify, defer or cancel a purchase is often aware of perceived risk. They are "Perceived risk," the size of the purchase amount, the degree of product performance, advantages and disadvantages, as well as the confidence of the consumer.

(6) Post-purchase evaluation

After consumers did the purchase, the decision-making process continues to help them decide next purchase. They have to evaluate the purchase of goods. There

are two theories to judge consumers' post-purchase behavior:

1) Expected Satisfaction Theory；

2) Cognitive Gap Theory;

When consumers use the product, they gain the corresponding consumer experience and take some actions after evaluation. Consumers will do the purchase again if the experience is good. On the contrary, they will conduct a negative publicity, or even discourage others to buy. The purchased products will be leased, lent, shelved, discount processed, transferred to others, returned or abandoned.

### 2.5.3 Different Factors Analysis of Consumers' Behaviors

(1) The definition of consumption behavior

1) Consumer decision-making process

Consumer decision-making process is to define consumer’s behavior as the process which consumer purchase and deal with strategies. Consumers are affected by mainly two factors: external factors and internal factors. Theory of consumer decision-making process is a traditional behavior theory. The studies of consumer behaviors are limited on purchase strategy behavior. Thus, it is also called consumer purchase strategy process. Blackwell, Hawkins and Schiffman have related viewpoints.

2) Experience theory

In consumer purchasing decision-making process, consumer behavior is a rational behavior is a reasonable extension of mature self. But inexperience theory, consumer behavior is the process of experience. It is often a sensuous act - the consumer is in the experience of the purchase, consumption in the experience, and to make decision in the experience. Thus, the factors that influence consumer behavior are the experience process and its effects. "Experience" reveals the diversity of consumer needs and reflects and meets the needs of consumers. "Experience theory" illustrates the purpose of consumer behavior, and it is to meet the needs of consumers

from the perspective of analysis of consumer behavior. Mowen and Schiffman illustrated the viewpoint in their books.

3) Stimulation - response theory

Consumer decision-making process theory and experiential theory are from the consumers themselves to study consumer behaviors. "Stimulation-response theory" defines the relationship between the consumer behaviors. This theory is called stimulus-response theory or reaction theory. This theory suggests that consumer behavior is a consumer response to stimulus. Kotler considered that stimulating factors are mainly marketing factors and external environmental factors. In these factors, consumers make personalized treatment to the information and eventually produce the choice of reaction. Kotler's external environmental factors are different from the external factor of consumer strategy process theory. He meant big environmental factors (technology, politics, economy and culture). Kardes classified stimulus factor as three categories: personal variables, environmental variables, and interaction of personal and environmental variables. On the stimulus of these variables, consumers make Emotional, cognitive and behavioral responses. Thus, factors that influence consumer behavior are related stimulus.

4) Balance and coordination theory

In balance and coordination theory, the consumer behavior is the interaction between consumers and marketers interactive behavior. It is the result after being balanced. The implementation model of consumer exchange is described in detail in Mowen's book. In this model, enterprises and consumers are affected by environmental factors, including situation, group, family, culture, subculture, international events and regulations. For consumers, these external factors will be filtered through the consumer's personal factors and will affect the exchange behavior of consumers. For marketers, when facing the external environment factors, they will make positive responses. That is, by environmental analysis, they understand the situation of the environment and do more researches about consumers in order to

facilitate the formation of exchange-related strategies and measures. Parry's model revealed that the process of consumer behavior is the process of value realization. In this process, marketers provide products and their related benefits; the final realization of the exchange is the marketers and consumers to make the appropriate value judgments and realize the value of each other's process. Therefore, the factors that influence consumer behavior are the exchange of interest and value factors.

(2) Consumer behavior deciding theories

1) Comprehensive determinism

Comprehensive determinism tries to capture the factors that influence consumer behavior without focusing on these factors to show which factors are more important. Many of the early scholars made contributions to the behavior of consumers mainly for the general lists. The consumer behavior is understood as the internal factors and external factors and the results of the joint action.

2) Hierarchical determinism

In hierarchical determinism, it is believed that the factors that influence consumer behavior are hierarchical. Some factors are deep-rooted factors that are directly affected by direct factors that have a direct impact on consumer behavior. Hawkins's model defined the consumer's behavior factors to external and internal factors. The combined effect of these factors determines the consumer's lifestyle and self-concept, thus affecting their needs and s the consumer's purchase. From Hawkins' view, the most important factors influencing consumer behavior are lifestyles and self-concepts and the resulting demands. This view led to a wide range of lifestyle research.

3) Process determinism

In process determinism, the consumer behavior and its influential factors play a certain role in the process of discussion. Process factors make relevant influencing factors play its role, resulting in consumer behavior. The purchase process, the consumption process, the mental activity process and the experience process all

affect relevant internal and external factors.

4) Relationship determinism

In relationship determinism, consumer behavior and its influencing factors play a determining role by corresponding relationship. Situation factors often lead to the emergence of relations. The exchange process determines the consumer's purchase behavior. Stimulation of the relationship between the strength and determines the intensity of consumer response. Whether the value of the product provided by the company matches the consumer's expectations determines the happening of exchange behavior. This theory emphasizes the relationship between the nature and intensity of the impact of consumer behavior.

5）Marketing determinism

Marketing determinism emphasizes the impact of corporate marketing on consumer behavior. They considered that consumer behavior is due to marketing efforts.

6）Behavioral Impact Theory

Mown described behavioral impact in detailed in his book. He considered when a powerful external cause occurred; consumers do not need to have strong feelings or ideas to buy. This is behavioral impact. In this situation, consumers do not have to go through a sensible decision-making process or rely on certain emotions to buy products or services. On the contrary, these purchases originate from behaviors that are directly affected by external factors, such as promotions, cultural norms, the natural environment, or economic pressures.

From the above many research results, most of the theories have certain impact of consumers.

### 2.5.4 Factors Affecting Consumption of Organic Fruits and Vegetables

Philip Kotler thinks People's consumption behavior is to satisfy their needs and desires of the goods for the discovery, purchase, use, evaluation and a series of

processes. This process includes both the intrinsic psychological activities of consumers also includes external factors. From a professional point of view, people's consumer behavior is constituted by a series of links, that is, a system of decision-making process. This concept is shown in Figure 2-3:

**Figure 2-3**

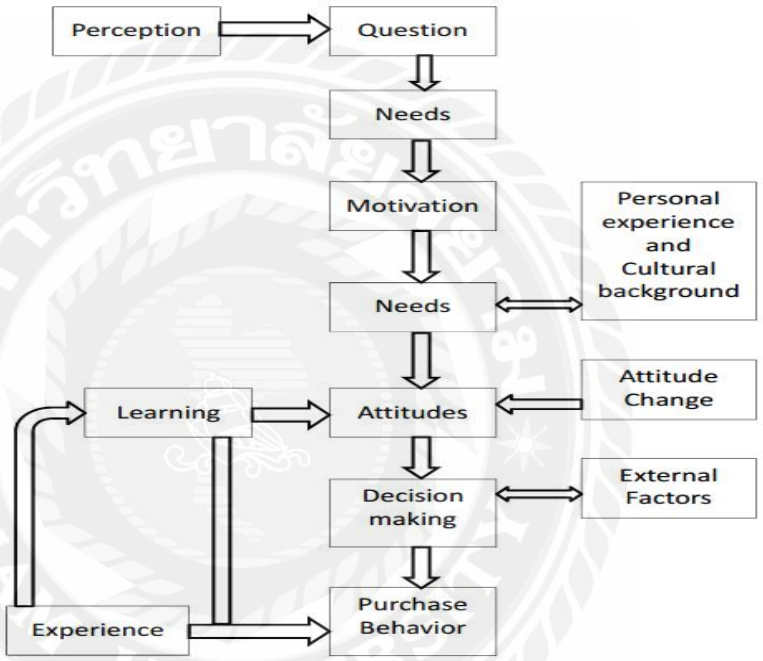



Figure 2-3 Decision-making process of consumer behavior

In this systematic strategy process, a variety of factors on the consumer behavior can be summarized as two reasons: Del Hawkins' personal factors and external factors in 'Two - Factor Model'.

What is Two - Factor Model? It includes personal factors and external factors.

(1) Personal factors: Including social class, perception, emotion, motivation, attitudes and learning, personality and self-concept, generation and lifestyle; The

social class can be specifically interpreted as age, status, income, occupation, education;

(2) External factors: Including culture and subculture, social consumption infrastructure, family, reference group and market factors, in which market factors can be divided into marketing communication and marketing elements.

1) Culture and subculture, specifically interpreted as values, traditions, religion, nation;

2) Social consumption infrastructures, specifically interpreted as policies, consumer infrastructure and technology；

3) Family, specifically interpreted as family structure, life cycle, decision-making model;

4) Group as reference, specifically interpreted as qualifications, contact types and attraction;

5) Marketing communication, specifically interpreted as advertising, promotion, public relations and consumer education;

6) Marketing elements, specifically interpreted as brand, quality, service and context.

We study the future economic planning of the Beijing-Tianjin urban area, the agricultural industries are integrated and with coordinated development. Thus the economic environment is unified and there is the same social consumption infrastructure in this area. Regional ethnic distribution in the proportion of ethnic groups is 3-5%. The traditional, religious, ethnic and other cultural and sub-cultural factors are basically the same. Therefore, theoretical structure is suitable for the choice of Two –Factor Model.

# CHAPTER 3

# METHODOLOGY

## 3.1 Research Design

The main purpose of the study is to investigate the direct factors that influence consumers' purchase of organic fruits and vegetables under the circumstances that people are increasingly familiar with organic products. Two-factor theory which influences consumer's behavior as a framework, the study tries to understand the two aspects of consumer characteristics and consumer habits from the external factors and internal factors.

## 3.2 Investigation Research

There are many research methods about consumer behaviors, mainly observation, investigation, experiment and projection method. The method used in this study is the survey.

Observation method does not have a fixed record, more casual, and more trouble to deal with the findings; projection method is a structure-free test, the direct question and conditions reflecting the test results are not unified; experimental method is used in the empirical research stage, thus, survey method is used in this research.

## 3.3 Design of Questionnaire

A reasonable scientific questionnaire will contribute to defining the questions of the study. In this paper, a large number of reference literatures of earlier scholars in different industries were reviewed and designed questionnaires. The study combined with the former experience of the preliminary design of the questionnaire, and consulted a number of graduate students on the questionnaire for several times.

According to the purpose of the study and the recommendations of the consumer, some revisions of the questionnaire and the structure were made. The final discussion with the instructor to determine the final questionnaire has been finished (Appendix 1).The questionnaire mainly consists of six parts: personal and family factors, understanding and understanding of organic fruits and vegetables factors, the price factor, the purchase of factors, purchase status and purchase purpose factors.

### 3.4 Variables Selection and Predictions

Del Hawkin's two-factor framework decomposes the factors that affect consumption behavior. The factors that affect consumption of organic fruits and vegetables are divided into several parts: personal and family factor, knowledge of organic fruits and vegetables, price factor, purchase way factor, purchase status and purchase purpose.

(1) Personal and family factor include gender, age, family structure, families over the age of 60 or under 12, cultural level and monthly income level;

(2) Knowledge of organic fruits and vegetables includes organic fruits and vegetables are safer, taste better, more delicious, nutrition, healthy, brands/origins and increasing brands;

(3) Price factors include the price difference of organic and general fruits and vegetables and consider the price of organic fruits and vegetables is higher;

(4) Purchase ways include which purchase way is popular and if the chosen purchase way is more convenient?

(5) Purchase status includes direct purchase, promotion purchase and ads/promotion influences;

(6) Purchase purpose defines the living status of organic fruits and vegetables of consumers.

In this study, these factors will be analyzed and main factors will be carefully confirmed.

Selected variables and study expectations are listed as follows:

**Variable selection and research expectations**

| Variables | Research Expectations |
|---|---|
| 1. Personal and family factors | |
| Gender | positive |
| Age | negative |
| Family structure | negative |
| Families over the age of 60 or under 12 | positive |
| Cultural level | positive |
| Monthly income level | positive |
| 2. Knowledge of organic fruits and vegetables | |
| Organic fruits and vegetables are safer | positive |
| Organic fruits and vegetables taste better | positive |
| Organic fruits and vegetables are nutritious | positive |
| Organic fruits and vegetables are healthy | positive |
| Brands/ origins | positive |
| Increasing brands of organic fruits and vegetables | positive |
| 3. Price | |
| The price difference of organic and general fruits and vegetables | negative |
| Consider the price of organic fruits and vegetables is higher | negative |
| 4. Purchase ways | |
| Which purchase way is popular | positive |
| If the chosen purchase way is more convenient? | positive |
| 5. Purchase status | |
| Direct purchase, not influenced by promotion | positive |
| Purchase under promotion | positive |
| Influenced by ads/promotion | positive |
| 6. Purpose of purchase | |
| Purpose of purchase | positive |

### 3.5 Data Analysis

#### 3.5.1 Model Selection

Logistic regression model is utilized in the study.

Logistic regression model is a probabilistic nonlinear regression model and a multivariate relation analysis method. It is to explain the classification results and the relationship between multiple influencing factors, that is, the dependent variable p and the relationship between multiple independent variables x. The main reasons are as follows:

(1)Regression analysis is generally used to study the relationship between variables, including linear regression analysis and non-linear regression analysis. Variables in linear regression analysis must be continuous Variables. The relationship between variables must also be a number of relationships, cannot be used to solve the variables for the discrete variables. However, practically, most of the relationship between the various variables is a nonlinear relationship; the linear regression equation cannot be used to explain the relationship between the various variables.

If we use the nonlinear regression analysis in the research process, due to the complexity of the nonlinear regression analysis, in the interpretation of nonlinear regression analysis, the appropriate nonlinear regression model is appropriately transformed. So that it can be transformed into a linear model. The linear regression equation was used to solve, thus nonlinear regression is not suitable for the study.

(2) Logistic regression analysis is a basic principle to use a set of data to fit the logistic regression model and is used to show a number of variables from variables x and a variables p value of the relationship. It reflects the p on the interdependence of x. Logistic regression model can effectively limit the range of the dependent variable between [0, 1], especially for the dependent variable as a binary variable. The dependent variables of consumer purchase in current study are ‘yes’ or ‘no’, which are represented by ‘0’ or ‘1’. Thus the Logistic regression model is used.

### 3.5.2 Model Checking

We cannot explain the relationship between variables and explain variables conclusion simmediately after the establishment of the Logistic regression equation and it cannot be used to analyze and predict the actual results of the problem. We have to carry out a variety of tests and verify the rationality of the established Logistic regression equation through the test. That is to verify the validity of the Logistic regression equation for the interpretation of the variables relationship. The following test methods are usually used:

(1) KMO test. KMO test is used to test the relation coefficient of the variables and Partial correlation coefficient. It is mainly used for multivariate statistical factor analysis. The value of KMO is between 0 and 1. If the sum of squares of the correlation coefficients for all variables is much larger than the sum of the partial correlation coefficients, the KMO value approaches 1, which means that the correlation between variables is very strong. In other words, these variables are suitable for factor analysis. On the contrary, if the sum of the correlation coefficients of all variables approaches 0, the KMO value tends to be closer to 0, which means that the correlation between variables is weak. This means these variables are not suitable for factor analysis.

(2) Reliability analysis

The Cronbach and α value were used to determine the reliability. Cronbach proposed α coefficient method in 1951. The shortcomings of the partial split method have been overcome, and it is the most commonly used social science research reliability. More references in comparison of confidence level and Cronbach α coefficient.

(3) Parameter significance test. We usually use the Wald chi-square to test the significance of the parameters, and in the regression equation, the variables must be able to interpret the variables better, or the variables should be eliminated. Wald chi-squared is used to determine whether the interpretation of variables can be better

explained by the interpretation of variables, whether it should be included in the regression model. A Wald statistic can be established subject to a chi-square distribution with a degree of freedom of 1. If the Wald chi-square test of Variables is interpreted to be greater than 3.841 at the level of $\alpha = 0.05$ and greater than 6.635 at the level of $\alpha = 0.01$. At the level of $\alpha = 0.0001$ greater than 10.828 indicates that the test results are significant, explaining that variables is better able to interpret interpreted variables, and such variables can be placed in the regression Logistic model. (Wang Jichuan，2001)

(4) Goodness of fit test. Goodness of fit test is to check the sample data points in the sample. It is to test the degree of aggregation around the regression line, through the degree of aggregation to determine the regression equation on the sample data representative. The higher the clustering of the data points, the better the regression equation is fit to the sample points. In a linear regression model， to use the decision coefficient R2 to measure the fit of the sample regression line to the sample observations, which can also be used in multiple linear regression. As the Logistic regression model can be transformed into multiple linear regression model, there is no corresponding statistical index in the Logistic regression model, some scholars put forward the class R2 on the basis of the likelihood value, which can be used to measure the fitting degree of the sample regression line to the sample observation value in the Logistic regression model. Cox & Snell R2 and Nagelkerke R2 are common tools for testing the fit of the regression equation to sample observations. Cox & Snell R2 is usually less than 1. Nagelkerke adjusted Cox & Snell R2 and proposed the adjusted class decision coefficient of the logistic regression model, so the value of R2 was (0, 1).

(5) Likelihood ratio chi - square test. The significance test of the regression equation is a hypothesis test of whether or not the interpreted variables are significantly related to the full interpretation variables. In the multiple linear regression model test is achieved by F test. In the Logistic regression model we used

the chi-square test of likelihood test for the corresponding test. The likelihood ratio value range is [0, 1]. When the likelihood ratio value approaches 0, the explanatory variables are not related to the interpreted variables or the correlation is small. When the coefficient value approaches 1, the explanation of the variables is significantly related to the interpreted variables.

### 3.6 Sample Collection

This study was focused on first-tier urban consumers. According to Tanaka (1987), the number of samples is at least five times the number of measurement variables, thus in this study, 280 questionnaires were distributed in a sample-based manner. The general survey methods include questionnaire, mailing and network questionnaire to carry out questionnaire survey. In this study, the network questionnaire was used as the survey method.

### 3.7 Research Limitations

The study was limited by the following factors:

(1) The sampling method was adopted, and the questionnaires were still focused on the majority under the age of 50. For the groups with purchasing power, the 50-60 age group was slightly weaker；

(2) The influencing factors were emphasized on consumer factors.

# CHAPTER 4

# RESULTS

## 4.1 Narrative Statistical Results and Analysis

The study focused on the sampling of the consumption of residents in Beijing and Tianjin area.

According to Tanaka (1987), the number of samples is based on a measurement variable of at least five times the principle. A total of 280 questionnaires were sent out and 243 questionnaires were collected. There were 80 questionnaires that did not purchase organic agricultural products, and 163 questionnaires were purchased. The recovery was 86.79%, and therefore the recommended value for the number of samples was met. Table 4-1 summarizes the status of the questionnaire:

**Table 4-1**

**Questionnaire collection statistics**

| Questionnaires issued | Questionnaires collected | Questionnaires with purchase experience | Questionnaires with no purchase experience | Recovery rate（%） |
|---|---|---|---|---|
| 280 | 243 | 163 | 80 | 86.79 |

### 4.1.1 Gender

From the distribution of gender situation From the distribution of gender situation， samples of 163 people with purchase experience. There are 67 men which account for 41.1% of the purchase experience sample, a total of 96 women, who accounted for 58.9% of purchase experience sample. In general, we believe that women usually do procurement tasks, so the purchase of organic agricultural products is also the majority of women. The proportion of women is higher than men is a normal. When doing this study, women did not chosen deliberately as the survey

samples, and the current gender ratio of the survey is more meaningful to study the true state of the object.

### 4.1.2 Age

In the survey results, age from 20 to 60 years of age is involved in the design of the questionnaire. They are divided into five age segment: 64 people under the age of 20-29, accounting for 39.26% of the number of samples with purchase experience; 66 people in 30-39 years-old section, accounting for 40.49% of the number of samples with purchase experience; 29 people in 40-49 years-old section, accounting for 17.79% of the number of samples with purchase experience; 1 person in 50-59 year-old section, accounting for 0.61% of the number of samples;3 people over 60 years old, accounting for 1.84% of the number of samples; consumers under the age of 20 are not primarily responsible for purchasing agricultural products in the household, so they are avoided in the sample selection; people over the age of 50 are limited by their educational level and vision. It is difficult to understand the contents of the questionnaire. In the process of investigation, the surveyors are required to explain each item, which is time consuming and energy consuming.

### 4.1.3 Family Structure

There are four parts in family structure in the survey, 28 living alone, 17.18% of the purchase experience sample; 26 couples, 15.95% of the purchase experience sample; 70 family of 3, 42.94% of the purchase experience sample; 39 living with parents, 23.93% of the purchase experience sample; From the overall distribution, the family of three and living with parents are the largest proportion. They are also the most demanding group which matches the reality.

### 4.1.4 Family With Old Man and Children

From the survey, 125 families with old men and kids, 76.69% of the purchase experience sample; 38 families with no old men and kids, 23.31% of the purchase experience sample; families with old men and kids tend to share the purchase responsibility considering the nutrition needs. This matches the reality.

### 4.1.5 Cultural Level

From cultural level, the education distribution is more concentrated. Under senior high is 27, 16.56% of the purchase experience sample; 19 with high school and college degree, 11.66% of the purchase experience sample; 117 over college degree, 71.78% of the purchase experience sample; from overall situation, most respondents have higher degree, 71.78% of the purchase experience sample over college degree.

### 4.1.6 Income Level

From the survey, the income distribution of respondents is wider. Five sections are divided; 33 people are under monthly income of 3000, 20.25% of the purchase experience sample; 42 people in monthly income of 3001-5000, 25.77% of the purchase experience sample; 30 people in monthly income of 5001-8000, 18.4% of the purchase experience sample; 37 people in monthly income of 8001-10000, 22.70% of the purchase experience sample; 21 people in monthly income of over 10000, 12.88% of the purchase experience sample; 88 people in monthly income of 5001-10000, 53.99% of the purchase experience sample; this basically matches the region's income distribution, and that the impact of income levels on consumption is the most obvious.

### 4.1.7 Organic Fruits and Vegetables are Safer

In the survey, 38.78% of respondents strongly agree with organic fruits and vegetables are safer, 25.71% agree, 33.06% fair, 2.45% disagree and strongly disagree. More than half of the consumers agree with organic fruits and vegetables are safer.

### 4.1.8 Organic Fruits and Vegetables Taste Better

In the survey, 34.29% of respondents strongly agree with organic fruits and vegetables taste better, 22.45% agree, 38.78% fair, 4.49% disagree and strongly disagree.

### 4.1.9 Organic Fruits and Vegetables are Nutritious

In the survey,40%of respondents strongly agree with organic fruits and vegetables are nutritious, 22.45% agree, 35.10% fair, 3.67% disagree and strongly disagree. More than half of the consumers agree with organic fruits and vegetables are nutritious.

### 4.1.10 Organic Fruits and Vegetables are Healthy

In the survey, 49.39%of respondents strongly agree with organic fruits and vegetables are healthy. 23.67% agree; 24.90% fair. 2.04% disagree and strongly disagree. 73% of consumers agree organic fruits and vegetables are healthy; it is over 2/3.

### 4.1.11 Brands/Origins

In the survey, 34.29% strongly care, 15.92% care, 40.82% fair, 8.98% not care and not care at all. Almost half of consumers show fair or not care.

### 4.1.12 Increase of Brands

In the survey, consumers pay more attention on increase of brands: 52.24% strongly agree, 17.55% agree, 28.57% fair. 1.63%chose disagree and strongly disagree. More than 70% of consumers are interested in increase of brands which means there are limitations on brands. It is suitable to develop more brands.

### 4.1.13 The Price Difference Between Organic and Ordinary Fruits and Vegetables

In the survey, 40.41% strongly care, 28.98% care, 17.96% fair, and only 12.66% do not care and not care at all. The data above indicates the price factor is the most sensitive and the difference is bigger.

### 4.1.14 Consider The Price is Higher

In the survey, 149 people consider the price is higher, 91.41%; 14 people do not consider the price is higher, 8.59%. This means it is common to consider the price is higher. It has greater influence on purchase behavior and a factor to restrict consumption. This matches the reality.

### 4.1.15 Purchase Ways

Three ways are chosen in the study: traditional market, supermarket and on-line shop. 33 people in traditional market, 20.25% of the purchase experience sample； 123 people in supermarket, 75.46% of the purchase experience sample； 7 in on-line shop, 4.29 % of the purchase experience sample； from the results, the highest purchase rate happened in supermarket. The second on is traditional market. This matches the daily purchase habits.

### 4.1.16 Whether The Purchase Way is Convenient

In the aspect of 'If the purchase way is convenient', Likert Scale was used in this study. 66 consumers considered very convenient, 40.49% of purchase experience sample; 55 consumers considered convenient, 33.74% of purchase experience sample; 31 consumers considered fair, 19.02% of purchase experience sample; 9 consumers considered not so convenient, 5.52% of purchase experience sample; 2 consumers considered not convenient at all, 1.23% of purchase experience sample; from the results, 121 people think convenient and very convenient, 74.23% of purchase experience sample. Thus, the purchase ways will not affect consumer behavior.

### 4.1.17 Purchase Organic Products Initiatively

In the survey, the consumer's purchase rate is high: 36.73% of consumers chose strongly agree; 24.08% agree, 29.80% fair. Only 9.38% chose disagree and strongly disagree. The results show consumers do the purchase initiatively.

### 4.1.18 Promotion of Organic Fruits and Vegetables

The rate that consumers purchase organic fruits and vegetables under promotion: 19.18% strongly agree, 22.04% agree, and 36.73% fair. 22.04% chose disagree and strongly disagree. This indicates consumers are not keen to promotion.

### 4.1.19 Affected By TV Ads/Promotion

The affection is not significant if the consumers are affected by TV ads or promotion: 22.04% chose strongly affected, 16.73% chose affected, and 37.55% fair. 23.67% chose not affected or not affected at all.

### 4.1.20 Purchase Purpose

Three options are set in 'Purchase purpose': for oneself, for family and as gift. 83 people chose for 'oneself-one person', 50.92% of purchase experience sample;

76 people for family, 46.63% of purchase experience sample; 4 people for gifts, 2.45 % of purchase experience sample. 159 are chosen for oneself and family, 97.55% of purchase experience sample. This matches the living level in this area.

## 4.2 Model Selection

### 4.2.1 Logistic Model Selection

In the previous section of this study, the theoretical framework and related hypotheses about the consumption behavior of organic fruits and vegetables are presented. The empirical model of consuming behaviors of organic fruits and vegetables is as follows:

$$P=e^{f(x)} / (1+ e^{f(x)})$$

(1) P is dependent variable, the probability of consuming behavior on organic fruits and vegetables;

(2) X is the result which influences the consuming behavior of organic fruits and vegetables, including personal factors, the recognition of organic fruits and vegetables, the price of organic fruits and vegetables, purchase ways, purchase status and purchase purpose. Each of these factors is reflected by a number of specific variables, so there are 20 variables from questionnaires.

P is affected by the factor X, the formula is as follows:

$$P=e^{f(x)} / (1+ e^{f(x)})$$

$$\ln P/(1-P) = f(x)=\beta_0+\beta_1X_1+\beta_2X_2+\ldots+\beta_KX_K$$

### 4.2.2 Variable Settings

Consuming behaviors of consumers on organic fruits and vegetables are influenced by many factors. 20 concrete variables, such as consumers' personal and family factors, the knowledge of organic fruits and vegetables, the price of organic fruits and vegetables, purchase ways and purchase purposes, are divided in detailed. They are listed as follows table 4-2:

**Table 4-2**

**Empirical model variables definition of purchase behaviors of consumers on organic fruits and vegetables**

| Codes | Names | Definition | Remarks |
|---|---|---|---|
| | Independent variables | | |
| X1 | Gender | male=1，female=0 | |
| X2 | Age | 20-29=1， 30-39=2，40-49=3，50-59=4，over 60=5 | |
| X3 | Family structure | Living alone=1，Couples=2，family of 3=3<br>Living with parents=4 | |
| X4 | Families over the age of 60 or under 12 | yes=1，no=0 | |
| X5 | cultural level | Under senior high=1，senior high or college=2，university and above=3 | |
| X6 | monthly income level | Under 2000=0,2000-4000=1, 4000-6000=2,<br>6000-8000=3， 8000-10000=4,over 10000=5 | |
| X7 | Organic fruits and vegetables are safer | Strongly agree=1，Agree=2，Fair =3，<br>Not very agree=4，Strongly disagree=5 | |
| X8 | Organic fruits and vegetables taste better | Strongly agree=1，Agree=2，Fair =3，<br>Not very agree=4，Strongly disagree=5 | |
| X9 | Organic fruits and vegetables are nutritious | Strongly agree=1，Agree=2，Fair =3，<br>Not very agree=4，Strongly disagree=5 | |
| X10 | Organic fruits and vegetables are healthy | Strongly agree=1，Agree=2，Fair =3，<br>Not very agree=4，Strongly disagree=5 | |
| X11 | Brands/ origins | Strongly agree=1，Agree=2，Fair =3，<br>Not very agree=4，Strongly disagree=5 | |
| X12 | Increasing brands of organic fruits and vegetables | Strongly agree=1，Agree=2，Fair =3，<br>Not very agree=4，Strongly disagree=5 | |
| X13 | The price difference of organic and general fruits and vegetables | Strongly agree=1，Agree=2，Fair =3，<br>Not very agree=4，Strongly disagree=5 | |
| X14 | Consider the price of organic fruits and vegetables is higher | Yes=1，No=0 | |
| X15 | Purchase ways | Traditional market=1，Supermarket=2，Internet=3 | |
| X16 | If the chosen purchase way is more convenient? | Convenient=1，More convenient=2，Fair=3，not so convenient=4，Not convenient at all=5 | |
| X17 | Direct purchase, not influenced by promotion | Strongly agree=1，Agree=2，Fair =3，<br>Not very agree=4，Strongly disagree=5 | |
| X18 | Purchase under promotion | Strongly agree=1，Agree=2，Fair =3，<br>Not very agree=4，Strongly disagree=5 | |
| X19 | Influenced by ads/promotion | Strongly influenced=1，influenced=2，Fair =3,<br>not influenced=4，not influenced at all=5 | |
| X20 | Purpose of purchase | For oneself=1，for family=2，for gift=3 | |
| | Dependent variables | | |
| Y | Purchased before | Yes=1，No=0 | |

### 4.3 Factor Analysis

#### 4.3.1 Determination of Sampling Fitness of KMO

Potential variables cannot be directly measured; we use factor analysis to explore the structural elements of these concepts, the definition of potential facets. When the relationship between variablesis too high or too low, they are not suitable for factor analysis. KMO and Bartlett's tests of sphericity are used to decide to do factor analysis or not. Kaiser (1974) proposed determination of sampling fitness of KMO as table 4-3:

**Table 4-3**

| 0-0.5 | 0.5-0.59 | 0.6-0.69 | 0.7-0.79 | 0.8-1.0 |
|---|---|---|---|---|
| Not acceptable | Cruel | Ordinary | Moderate | Great |

Bartlett's test of sphericity is calculated by related coefficient. In the general case, the value of the correlation matrix must be significantly greater than zero as a criterion for determining whether or not it is appropriate to make a factor component.

**Table 4-4 Analysis of determination of sampling fitness of KMO**

**KMO and Bartlett Tests**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy | | .732 |
| Bartlett Test of Sphericity | Approx. Chi-Square | 1076.290 |
| | Df | 190 |
| | Sig. | .000 |

As shown in table 4-4: The KMO sampling suitability value of this study was 0.732> 0.7, and the significance of Bartlett's spherical test was 0.000 <0.05, which was suitable for factor analysis and satisfies the validity requirement.

### 4.3.2 Factor Extraction

By means of eigenvalues greater than 1, the variance explained by variables is more than 1, which is important and can be preserved. When less than 1, it means that it is not important and can be discarded. As shown in table 4-5.

**Table 4-5**

**Total Variance Explained**

| Factor | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 3.844 | 19.219 | 19.219 | 3.844 | 19.219 | 19.219 | 3.529 | 17.645 | 17.645 |
| 2 | 1.791 | 8.970 | 28.189 | 1.794 | 8.970 | 28.189 | 1.649 | 8.243 | 25.889 |
| 3 | 1.663 | 8.313 | 36.502 | 1.663 | 8.313 | 36.502 | 1.508 | 7.540 | 33.428 |
| 4 | 1.473 | 7.367 | 43.870 | 1.473 | 7.367 | 43.870 | 1.433 | 7.164 | 40.592 |
| 5 | 1.236 | 6.178 | 50.048 | 1.236 | 6.178 | 50.048 | 1.418 | 7.092 | 47.684 |
| 6 | 1.130 | 5.648 | 55.696 | 1.130 | 5.648 | 55.696 | 1.382 | 6.908 | 54.591 |
| 7 | 1.020 | 5.099 | 60.795 | 1.020 | 5.099 | 60.795 | 1.241 | 6.204 | 60.795 |
| 8 | .989 | 4.946 | 65.741 | | | | | | |
| 9 | .899 | 4.497 | 70.238 | | | | | | |
| 10 | .864 | 4.319 | 74.557 | | | | | | |
| 11 | .767 | 3.835 | 78.392 | | | | | | |
| 12 | .716 | 3.581 | 81.972 | | | | | | |
| 13 | .654 | 3.270 | 85.242 | | | | | | |
| 14 | .576 | 2.880 | 88.122 | | | | | | |
| 15 | .545 | 2.727 | 90.849 | | | | | | |
| 16 | .539 | 2.693 | 93.524 | | | | | | |
| 17 | .454 | 2.272 | 95.814 | | | | | | |
| 18 | .327 | 1.637 | 97.451 | | | | | | |
| 19 | .320 | 1.598 | 99.049 | | | | | | |
| 20 | .190 | .951 | 100.00 | | | | | | |

Extraction method: principal component analysis

Through SPSS principal component factor analysis, the results showed that seven factors were extracted, their eigenvalues were all greater than 1, and the cumulative contribution rate was 60.795% (table 4-5). If the factor retained in the social science metrology study can account for more than 60% of all variables, they can be analyzed for retention.

### 4.3.3 Principal Component Factors

After factor extraction, we need factor rotation, which will make it easier to interpret the meaning of the factor, and to name the common factor after a reasonable interpretation of the significance of the factor. Factor rotation is shown in table 4-6：

**Table 4-6**

**The rotated component matrix**

| | Components | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| X9_Organic fruits and vegetables are nutritious | .869 | | | | | | |
| X8_Organic fruits and vegetables taste better | .854 | | | | | | |
| X7_Organic fruits and vegetables are safer | .835 | | | | | | |
| X10_Organic fruits and vegetables are healthy | .822 | | | | | | |
| X12_Increase of brands | | | | | | | |
| X11_Brands/Origins | | | | | | | |
| X13_The price difference between organic and ordinary fruits and vegetables | | .735 | | | | | |
| X14_The price is higher | | -.713 | | | | | |
| X1_Gender | | .654 | | | | | |
| X6_Income level | | | .763 | | | | |
| X15_Purchase ways | | | .640 | | | | |
| X5_Cultural background | | | .625 | | | | |
| X3_Family structure | | | | .781 | | | |
| X20_Purchase purpose | | | | .717 | | | |
| X16_The selected way is convenient | | | | | .760 | | |
| X17_Purchase initiatively, not affected by promotion | | | | | .685 | | |
| X19_The affection of TV ads/promotion | | | | | | | |
| X2_age | | | | | | .742 | |
| X18_Purchase under promotion | | | | | | | .758 |
| X4_Families above 60 or under 12 | | | | | | | |

Extraction method: Principal Component Analysis

Rotation method: Varimax with Kaiser normalization

a. Rotation: converged in 6th iteration

In table 4-6, inappropriate questions, cross-facet items, and topics cannot be named are removed. Such as: X14-The price is higher, X1-Gender, X15-Purchase ways, X20-Purchase purpose, X-17 Purchase initiatively. After the question is deleted, items and facets may change, so factor analysis should be done again to confirm the items and facets. The report output was sorted as follows table 4-7:

**Table 4-7**

**Rotated Component Matrix[a]**

| | Components | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| X9- organic fruits and vegetables are nutritious | .881 | | | |
| X8-organic fruits and vegetables taste better | .859 | | | |
| X7- organic fruits and vegetables are safer | .836 | | | |
| X10- organic fruits and vegetables are healthy | .828 | | | |
| X12-increase brands | | | | |
| X11-brands/origins | | | | |
| X6-income level | | .788 | | |
| X5-Cultural level | | .764 | | |
| X2-age | | | .867 | |
| X13-the difference between organic and ordinary fruits and vegetables | | | | .707 |
| X19-ads/promotion | | | | |
| X3-family structure | | | | |

Extraction method: Principal Component Analysis

Rotation method: Varimax with Kaiser normalization

a. Rotation: converged in 6th iteration

(1) Factor 1is combined by X7-Organic fruits and vegetables are safer, X8-Organic fruits and vegetables taste better, X9-Organic fruits and vegetables are nutritious, X10-Organic fruits and vegetables are healthy;

(2) Factor 2 consists of X5-Cultural background and X6- monthly income;

(3) Factor 3 consists of X2-age;

(4) Factor 4 consists ofX13-The price difference between organic and ordinary fruits and vegetables.

### 4.4 Reliability and Validity Analysis

The Cronbach and α values were used to determine the reliability：Cronbachα coefficient was first proposed in 1951 by Cronbach. It is designed to overcome the shortcomings of the partial half method and is the most commonly used social science research reliability. The standard is shown in Table 4-8：

**Table 4-8**

**Comparison of confidence level and Cronbach α coefficient**

| confidence level | Cronbach αcoefficient |
|---|---|
| Not credible | Cronbach α coefficient＜0.3 |
| Slightly credible | 0.3≦Cronbach α coefficient＜0.4 |
| Credible | 0.4≦Cronbach α coefficient＜0.5 |
| Credible（most common） | 0.5≦Cronbach α coefficient＜0.7 |
| Credible（second common） | 0.7≦Cronbach α coefficient＜0.9 |
| Very credible | 0.9≦Cronbach α coefficient |

After factor extraction, the reliability analysis is shown in Table 4-9.

**Table 4-9**

**Reliability statistics**

| Crobach's Alpha | Cronbach Alpha based on standardized items | N. of items |
|---|---|---|
| .563 | .580 | 8 |

From the data analysis of Table 4-9, the data used in this study α-value reliability is in a very credible range:

(1) In factor 1, organic fruits and vegetables are safer, organic fruits and vegetables taste better, organic fruits and vegetables are nutritious, organic fruits and vegetables are healthy, and increase of brands. α = 0.885 in factor 1, and high degree of confidence was achieved.

(2) In factor 2, cultural background and income level got α=0.494, a reliable degree of confidence was achieved.

Extraction factor validity and reliability are listed in Table 4-10.

**Table 4-10**

**Extraction factors validity and reliability**

| Factor facet | Code | Variables | Factor load | Eigenvalues | Explanation Variation% | Cumulative Interpretation Variation% | Reliability coefficient |
|---|---|---|---|---|---|---|---|
| Factor 1 | X7 | Organic fruits and vegetables are safer | 0.836 | 3.567 | 29.796 | 29.796 | 0.885 |
| | X8 | Organic fruits and vegetables taste better | 0.859 | | | | |
| | X9 | Organic fruits and vegetables are nutritious | 0.881 | | | | |
| | X10 | Organic fruits and vegetables are healthy | 0.828 | | | | |
| Factor 2 | X5 | Cultural background | 0.764 | 1.490 | 12.415 | 42.212 | 0.494 |
| | X6 | Income level | 0.788 | | | | |
| Factor 3 | X2 | Age | 0.867 | 1.240 | 10.336 | 52.547 | 0.580 |
| Factor 4 | X13 | The price difference between organic and ordinary fruits and vegetables | 0.707 | 1.059 | 8.824 | 61.371 | 0.580 |

## 4.5 Regression Analysis

### 4.5.1 Regression Analysis

In this study, 243 sample data were analyzed by binary logistic regression using IBM SPSS Statistics 23 software，the Enter method (Forced entry method) was

used, the results of factor analysis are introduced into the regression model, and a variety of tests, factor analysis results are as follows:

**Table 4-11**

**Regression Analysis of Various Factors and Consumption Behavior**

| Predictors | | Dependent variables=consuming behavior(1=yes, 0=no) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | M1 | M2 | M3 | M4 | M5 | M6 | M7 | M8 | M9 | M10 | M11 |
| Factor 1 | X7organic fruits and vegetables are safer | 0.365 | | | | | 0.596 | 0.301 | 0.353 | | | 0.555 |
| | X8 organic fruits and vegetables taste better | 0.239 | | | | | 0.151 | 0.223 | 0.23 | | | 0.109 |
| | X9 organic fruits and vegetables are nutritious | 0.828 | | | | | 0.722 | 0.879 | 0.835 | | | 0.765 |
| | X10 organic fruits and vegetables are healthy | 0.322 | | | | | 0.261 | 0.508 | 0.38 | | | 0.494 |
| Factor 2 | X5cultural level | | 0.475 | | | | 0.352 | | | 0.175 | 0.441 | 0.134 |
| | X6income level | | 0.024 | | | | 0.041 | | | 0.067 | 0.016 | 0.012 |
| Factor 3 | X2age | | | 0.049 | | 0.054 | | 0.077 | | 0.041 | | |
| Factor 4 | X13the difference between organic and ordinary fruits and vegetables | | | | 0.325 | 0.37 | | | 0.487 | | 0.157 | 0.321 |
| Cox & Snell R2 | | 0.055 | 0.031 | 0.017 | 0.004 | 0.02 | 0.083 | 0.068 | 0.057 | 0.049 | 0.039 | 0.101 |
| Nagelkerke R2 | | 0.077 | 0.043 | 0.023 | 0.006 | 0.028 | 0.115 | 0.095 | 0.08 | 0.068 | 0.054 | 0.141 |
| 2 Log likelihood | | 294.113 | 300.307 | 303.834 | 305.97 | 303.037 | 286.909 | 290.811 | 293.663 | 295.813 | 298.316 | 281.948 |
| Chi-square | | 13.828 | 7.634 | 1.936 | 5.702 | 9.946 | 21.032 | 17.13 | 14.308 | 12.128 | 9.625 | 25.993 |
| p-value | | 0.008 | 0.022 | 0.043 | 0.325 | 0.086 | 0.002 | 0.004 | 0.014 | 0.007 | 0.022 | 0.010 |

In Table 4-11, various factors and consumer behavior in the Logistic regression analysis:

(1) Factor 1 contains X7-organic fruits and vegetables is safer, X8-organic fruits and vegetables taste better, X9-organic fruits and vegetables are nutritious,

X10-organic fruits and vegetables are healthy. They are from the consuming behavior intention of independent variables, and the chi-squared value of the whole model was 13.828, while the P-value was 0.008 (P value <sig = 0.05, which could be used if required). This means in the Logistic regression model, the predictive variable has a significant effect on the consumption behavior. Also the behavior of the distribution of the way is to affect the intention. The P value of X8-organic fruits and vegetables taste better, X10-organic fruits and vegetables are healthy is significant, this means the variable is effective in predict consuming behavior intention.

(2) Factor 1 contains X5-the culture level, X6-the income level is independent variable to affect consuming behavior intention. The chi-squared value of the whole model was 7.634, while the P-value was 0.022 (P value <sig = 0.05, which could be used if required). In the Logistic regression model, the predictive variable has a significant effect on the consumption behavior, and the index is used to influence the behavioral intention. The P value of X6-income level is significant, which means the variable is more effective in predicting consuming behavior intention.

(3) Therefore, we extracted two factors which were significantly higher and two single factors from the table above：X8-organic fruits and vegetables taste better, X10-organic fruits and vegetables is healthy, X6-monthly income level, X2-age, X-13-the price difference of organic and general fruits and vegetables. Five factors were analyzed by Logistic regression analysis and the results are explained below:

**Table 4-12**

**Model parameter test**

| Variables in the equation | | | | | | |
|---|---|---|---|---|---|---|
| | B | S.E. | Wald | df | Sig. | Exp(B) |
| Step0 constant | .712 | .137 | 27.183 | 1 | .000 | 2.037 |

Table 4-12 is a logistic regression model with SPSS output only. It can be seen from the table that the estimated value of the constant term is 0.712, the standard error of the estimate is 0.137, the Wald test value is 27.183, df is 1, and the significance value of 0.000, reaching a significant level, which can deny the entire explanations variables coefficient to zero hypothesis.

**Table4-13**

**Omnibus Test of Model Coefficient**

| | | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Step1 | step | 22.769 | 5 | .000 |
| | block | 22.769 | 5 | .000 |
| | model | 22.769 | 5 | .000 |

Table 4-13 shows the significance of the overall coefficient of the model. The Chi-square value of the whole model is 22.769, Sig. = 0.000 and the significance of the overall coefficient of the regression equation is proved.

**Table 4-14**

**Model Summary**

| Step | -2 Log Likelihood | Cox-Snell R Suare | Nagelkerke R Square |
|---|---|---|---|
| 1 | 285.172[a] | .089 | .125 |

a. Elistmation terminated at iteration number 4 because paremeter estimates changed by less than .001

Table 4-14 shows the correlation strength test results in the Logistic model. The results show that the -2 Logitex value in the regression model is 285.172, the Cox & Snell R2 value is 0.089 (Cox & Snell R2 value is less than 1), the Nagelkerke R2 value Is 0.125 (Nagelkerke R2 values between 0 and 1). From the test results, the model of the fitting effect is ideal.

**Table4-15**

**Hosmer-Lemeshow test**

| Step | Chi-Square | df | Sig. |
|---|---|---|---|
| 1 | 3.024 | 8 | .933 |

b. Elistmation terminated at iteration number 4 because paremeter estimates changed by less than .001

The Logistic regression model showed a goodness of fit of 3.024 (Sig. = 0.933, Sig.> 0.05) indicating that the Logistic regression model of the independent variable has good goodness of fit, and the independent variable can effectively explain dependent variable.

**Table 4-16**

**Variables in the equation**

| | | B | Std. D | Wald | df | Sig. | Exp(B) |
|---|---|---|---|---|---|---|---|
| 1[a] | X8-organic fruits and vegetables taste better | -.367 | .183 | 4.002 | 1 | .045 | .693 |
| | X10-organic fruits and vegetables are healthy | -.185 | .193 | .926 | | .336 | .831 |
| | X6-income level | .280 | .114 | 6.055 | 1 | .014 | 1.323 |
| | X2-age | .263 | .182 | 2.096 | | .148 | 1.301 |
| | X-13-the difference between organic and ordinary fruits and vegetables | -.129 | .133 | .941 | 1 | .332 | .879 |
| | constant | .964 | .607 | 2.520 | 1 | .112 | 2.621 |

a. variables in step 1: x8-organic fruits and vegetables taste better, X10-organic fruits and vegetables are healthy, x6-income level, X2-age, x-13-the difference between organic and ordinary fruits and vegetables

In Table 4-16, we choose the most significant factor of significance; the results are shown in Table 4-17.

**Table 4-17**

**Variables in the equation**

| | | B | Std. D | Wald | df | Sig. | Exp(B) |
|---|---|---|---|---|---|---|---|
| 1[a] | X8-organic fruits and vegetables taste better | -.467 | .150 | 9.631 | 1 | .002 | .627 |
| | X6-income level | .305 | .113 | 7.357 | 1 | .007 | 1.357 |
| | X-13-the difference between organic and ordinary fruits and vegetables | -.168 | .129 | 1.696 | 1 | .193 | .845 |
| | constant | 1.313 | .506 | 6.728 | 1 | .009 | 3.719 |

b. variables in step 1: x8-organic fruits and vegetables taste better, x6-income level, x-13-the difference between organic and ordinary fruits and vegetables

The "Variables in Equation" table is the values of the independent parameter estimates and the significance test results in the regression equation: X6-monthly income level and X8-organic fruits and vegetables taste better on consuming behavior is the most significant. X13-the price difference of organic and general fruits and vegetables are not significant. They have very little effect on the model, and these factors are eliminated when the equation is finally established. Thus we build the relationship of y and x:

$f(x)=\beta_0+\beta_1X1+\beta_2X2+\ldots+\beta_KXK$

=1.313+0.305X6（monthly income level）-0.467X8 (organic fruits and vegetables taste better)

The probability of consumption behaviors behavior is as follows:

$P=e^{f(x)}/(1+e^{f(x)})$

$=e^{1.313+0.305X6（monthly\ income\ level）-0.467X8\ (organic\ fruits\ and\ vegetables\ taste\ better)}/(1+e^{1.313+0.305X6（monthly\ income\ level）-0.467X8\ (organic\ fruits\ and\ vegetables\ taste\ better)})$

When the P value of ≥ 0.5, meant consumption, P value of less than 0.5, meant no consumption.

# CHAPTER 5

# CONCLUSIONS

## 5.1 Research Conclusions

After empirical analysis of the factors that affect consumption, consumption in all the factors affecting the consumer come to the following conclusions, from strong to weak.

(1)The knowledge of organic fruits and vegetables

Among the variables of the knowledge of organic fruits and vegetables, organic fruits and vegetables is safer, organic fruits and vegetables taste better, organic fruits and vegetables are nutritious, and organic fruits and vegetables is healthy are main concerns of consumers. And the variance value was 29.796%; from the regression analysis: in knowledge of organic fruits and vegetables, the most persuasive factor is organic fruits and vegetables taste better. The most significant performance, sig = 0.002 <0.05, Wald value of 9.631, coefficient B value of -0.467, and the results showed a negative impact. In the results of questionnaire, consumers have 50% recognition on organic fruits and vegetables taste better, nutritious, healthy, brands/origins and increase of brands. This shows consumers' knowledge of organic fruits and vegetables is not sufficient.

(2) Consumers' personal and family

The personal and family factors include gender, age, family structure, family with old men and kids, cultural level and income level. Gender, age, family structure, cultural level and monthly income level are positively significant in regression analysis. However, in the regression analysis, age and cultural level were 0.148 and 0.134 in the regression analysis, respectively. The coefficient B was positive, but the value of sig was not significant, which could not be interpreted as representative consumer factor; However, in the factors influencing the consumption, the income

level in the regression analysis of Sig. = 0.007 <0.05, Wald value of 7.357, coefficient B value of 0.305, the results showed a positive effect, the performance was significant; 76.69% of the consumers are families with elderly men and children. This indicates personal and family factor has positive effect on organic fruits and vegetables, which promote the consumption of organic fruits and vegetable

(3) Price

Price factors include the price difference between organic and ordinary fruits and vegetables and whether the price of organic fruits and vegetables are higher.

Factor analysis of the impact of two questions on consumption was done. Factor analysis of the two were 0.735, -0.713, indicating that the impact of the two similar consumption but it shows the opposite effect. Thus, the price of organic fruit and vegetable is higher is deleted. However, in the regression analysis, the sig value of the price difference between organic and ordinary fruits and vegetables is 0.193, greater than 0.05. Wald value is 1.969, coefficient B value is -0.168, the results showed a negative impact. As the sig value is not significant, it cannot be explained as the impact of consumer factors. The study shows 69% of consumers care the price difference between organic and general fruits and vegetables. 91% of the consumers consider the price of organic fruits and vegetables is higher. The price factor is negatively related to the consumption.

(4) Purchase ways

Purchase ways include purchase places, the purchase way is convenient and the convenient purchase way for consumers. The convenient purchase way for consumers is taken as future research, not for item for factor analysis. Thus, the final regression analysis did not come to the final factor of the impact of consumption. 68% chose convenient and more convenient, 23% chose fair; the consumption locations are in supermarket, traditional market and internet. Therefore if the purchase ways are more convenient, the consumption of organic fruits and vegetables are positive affected.

(5) Purchase status

In the study, 60% of consumers are willing to consume actively, 30%chose fair; 41% of consumers are willing and very willing to consume in promotion,37%chose fair; 39% are affected by ads/promotion, 38% chose fair; From the collected data, consumers' active consumption is stronger, which has positive affection on consumption under ads and promotion.

(6) Purchase purpose

Organic foods for oneself and for family are 49% and 46%. This indicates great concerns on food safety of consumers. Organic fruits and vegetables are highly concerned and the consumption of organic fruits and vegetables is growing positively.

## 5.2 Suggestions

### 5.2.1 Enhance The Knowledge of Organic Fruits and Vegetables of Consumers.

The study found that the knowledge of organic fruits and vegetables of consumers are still not sufficient. Their recognition is mainly organic products are safe and nutritious. More nutritious nature and advantages could be introduced to consumers.

Let consumers have full understanding of the growth process of organic agricultural products. Organic agricultural products production requirements are also natural process of birth and rest. It is the protection of the ecological environment. It improves the vegetation ecology and protects the environment. These parts need to do more publicity, so the consumers of organic crops and organic agricultural products would have a better understanding. More information is transferred to help consumers make purchase decisions.

### 5.2.2 Reduce The Cost of Production to Improve The Purchasing Power of Consumers

From the study we learned that the price of organic fruits and vegetables is high which 90% of consumers with purchase experience. This is the main reason of its low consumption. The impact of income level on consumption is positive, reflecting the lack of purchasing power of local consumers, and purchasing power level is still limited. It is also the most important factor affecting market share. From a market perspective, high prices have always been an important factor in hindering consumption. In addition to improve the purchase power, ignore the market norms, set the same price as ordinary fruits and vegetables and have the same conditions such as sales, transportation and warehousing conditions.

The biggest difference lies in the production process. Organic fruit and vegetable production process must implement organic agriculture principles, organic agricultural products production methods and standards. Its soil, planting, fertilization and growth of all requirements should be met. By doing so, the cost of production would be reduced. Reducing the price of organic fruits and vegetables is a necessary condition. With the increasing needs of organic agricultural products, to reduce manufacturing cost is the main condition to increase sales, and the suggestions are as follows:

(1) Soil：land selection, frequency of use, soil pH standards to find the most reasonable use frequency；

(2) Planting：crop selection, selection, cultivation, planting and other optimization options；

(3) Fertilization and growth：organic fertilizer and organic pesticide selection and use, with the biological chain and the best cost choice.

### 5.2.3 Expansion of Sales Channels and Market Segmentation

There are a lot of sales, including supermarkets, traditional markets, specialty stores and online sales, are now playing a significant role in promoting. Whereas, the current study suggests several worthy developing ways are:

E-commerce: As the rapid development of electricity in the past two years, all kinds of goods can be purchased on the network. Organic food is also available on the network and a wide variety of sales channels. Thus the sales channel of organic fruits and vegetables can also be developed from the network.

Direct marketing

A. Consumers can directly from the network and telephone customization, direct delivery.

B. Organic fruits and vegetables can directly be sold to fruit society, so they will have regular sales.

Different consumer segments of the market segment.

### 5.2.4 The standardization of The Market

Although the rise of the network has brought convenience to consumers and manufacturers, it also brought both harms. Consumers receive fake goods and manufacturers were under fraudulent use of products, leading to the reduction of consumers. This requires attention of product quality assurance and product self-protection. Three aspects are concerned:

Brand management: Currently on the market operators have their own brand, but the survey found that consumers do not have great attention on the brands. Thus the companies still need to make more efforts on brand management.

Orderly market price mechanism: in addition to strictly in accordance with the requirements of production of organic farming production, the enterprise must also act according to market norms. Companies cannot arbitrarily set the price of organic agricultural products, and bad traders cannot arbitrarily increase the price of

organic goods. Under the premise of ensuring the cost and supply of products, more consumers can eat organic agricultural products so that production and marketing will form a virtuous circle.

The construction of corporate social responsibility: Both the brand management and the market order price mechanism are inseparable from the system constraints and policy regulation. The development of the market is not only to promote enterprise self-regulatory norms, but also to make full use of government policies and market support for the system of binding. Protection and promotion of the enterprises in the region and the sale of regional interests are the responsibilities of social corporates.

### 5.2.4 Suggestions

The four recommendations above are also used as a follow-up study to increase the market share of organic fruits and vegetables and organic agricultural products.

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# APPENDIX

I am a market researcher in Beijing and Tianjin area supermarkets, in order to meet consumer demands, to do organic fruit and vegetable market survey and to understand the great demand of organic fruits and vegetable and the factors that affect consumption, please answer the questions by your real situation.

This questionnaire is anonymous and all the findings are for reference only, so please feel free to answer all the questions. Thank you for patience.

Organic agricultural products: the production of agricultural energy in a closed cycle, the whole process of the use of agricultural resources, rather than the use of agricultural energy (fertilizer, pesticides, production regulators and additives). Cycle of the chain produced by the way of production, and certified by the organic food certification authorities of agricultural products.

Personal information

1.Gender：Male□ Female□

2.Age：20-29□ 30-39□40-49□50-59□ over 60□

3.Family Structure：

Living alone□ Couple□ Family of 3□ living with parents□

4. Families over 60 or under 12: Yes□ No□

5. Cultural level：

Below high school□ high school or college□ above university□

6. Income level

Less than 3000□ 3001-5000□ 5001-8000□ 8001-10000□ over 10000□

Questions

1. Have you purchased before? Yes□ No□

2. Knowledge of organic fruits and vegetable

2.1 Organic fruits and vegetables are safer

Very agree □ Agree□ Fair□ Not so agree□ Strongly not agree □

2.2 Taste better

Very agree □ Agree□ Fair□ Not so agree□ Strongly not agree □

2.3 Are nutritious

Very agree □ Agree□ Fair□ Not so agree□ Strongly not agree □

2.4 Are healthy

Very agree □ Agree□ Fair□ Not so agree□ Strongly not agree □

2.5 Brands/Origins

Very agree □ Agree□ Fair□ Not so agree□ Strongly not agree □

2.6 Increase brands

Very agree □ Agree□ Fair□ Not so agree□ Strongly not agree □

3. The price of organic fruits and vegetable

3.1 The price difference between organic and ordinary fruits and vegetables

Very care□ Care□ Fair□ Not so care□ Not care at all□

3.2 Do you think the price of organic fruits and vegetables is higher?

Yes□ No□

4. Purchase ways

4.1 Which way do you choose to do the purchase：

Traditional market□ Supermarket□ On-line shop□

4.2 Is your purchase way convenient?

Very convenient □ Convenient□ Fair□ Not so convenient □ Not convenient at all□

4.3 if 4.1 and 4.2 do not meet your needs, what is your favorite way?

5. Purchase Status

5.1 Do the purchase automatically

Very agree □ Agree□ Fair□ Not so agree□ Strongly not agree □

5.2 Purchase if that is a promotion

Very agree □ Agree□ Fair□ Not so agree□ Strongly not agree □

5.3 Do ads/promotion ads affect your purchase?

Very strong □ Strongly□ Fair□ not so strongly□ Not at all□

6. Purchase purpose: for oneself□ for family□ for gift□

Date: