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Green food development in China -focus on the east

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Executive Summary

The purpose of the dissertation is to research how to promote green food consumption in eastern China.	Terms of reference statement of problem/topic
The research draws attention to certain main factors affecting green food consumption which are income and education levels and ages. According to the questionnaire and data analysis, we find income levels and price of green food do not have great influence on green food consumption, while ages and education levels have.	Key findings summarized
Based on the results, there are perspectives to promote green food consumption. For consumers, the direct way is to increase their awareness of environmental protection and food health. For producers, they should ensure quality of food with diversity. For governments, it is important to strengthen supervision of producers and support consumers' buying behavior.	Problem solution summarized
It is recommended: 1) That consumers could get information from TV programs, radios and so on. Advertising aims at attracting target consumers. 2) That public organizations should cooperate with producers in holding some public benefit activities. 3) That governments monitor producers to explain the production process.	Recommendations summarized

Abstract

Purpose/aim The aim of our dissertation is to increase consumers' buying awareness of green food and promote green food consumption in eastern China.

Approach We collect data through a questionnaire and present hypotheses through reading related scientific articles. The data analysis includes description of samples and statistical tests in the form of cross tabulations, chi squares and frequency tables.

Findings The questionnaire researches consumers' income and education levels, ages and price of green food, etc. We find ages and education levels have a significant influence on frequency of buying green food, while income levels and price have no strong influence.

Originality/value An original idea is to research the current green food market, and based on it to increase the consumers' buying awareness and promote green food consumption. Further, the empirical data is collected from different cities in the east where there is a higher demand of green food. The study has value for the debate concerning the group of people who are older and have lower education levels as our great target consumers. The result of income levels and price means consumers are more lay attention to green food quality.

Key words: Consumers' income and education levels, ages, green food consumption, promotion.

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Wang Shuang (Belinda) Xiang Linjing (Layna) Xing Fei (Fred)

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Ch. 01 Introduction

In this chapter, we present Chinese food problems and the objectives of green food, compare Chinese eastern and western areas, as well describe purpose, limitation and outline of this dissertation.

China is a large agricultural country and with the modern processing, the demand for quality, uniform farm products in high volumes generated retailing and may transform agricultural production in China (Gale, *et al*., 2002). There is a large change on food consumption in the Chinese economy. Before consumers bought basic food but today they are more concerned with food safety (Wang, *et al*., 2007). The innovation of green food is remarkable for food production and marketing (Paull, 2008b). According to China Green Food Development Centre (CGFDC) (2010), green food is a "fundamental concept and objectives are to enhance food quality and safety, to promote consumer's health, and to protect agricultural bio-environment for sustainable development". Nevertheless, increasing green food consumption is not an easy task since it also depends on consumers' buying behavior.

Although green food exists in China, the concept it is new to the Chinese (Rezai, *et al*., 2011). It is often argued that an increasingly number of Chinese are interested in green food nowadays. Consumers may have consumption intention to buy green food but do not do it. The reason is they cannot ensure if the food is safe (Zhu, *et al*., 2012). Under this condition, the government plays a key role to encourage and support consumers to purchase green food. Actually, there is a specific department called China Green Food Association which is supported by the Chinese government to manage, investigate, educate, produce, stock and deliver, retail, supervise and consult green food production process.

We divide China into two parts, the east and the west. The east is richer than the west, like Beijing, Shanghai, Jiangsu, etc. Because the west is a vast territory with a scarce population and it is currently in the stage of satisfying the basic needs, most consumers are not able to consume green food.

1.1 Problem

Our problem is how to promote green food consumption in the east. We will argue that there are certain main factors of consumers' buying behavior, like income and education levels and ages which affect green food consumption.

1.2 Purpose

The purpose is to investigate the consumers' awareness of green food based on their income and education levels and ages. On the basis of that, we will design unique methods and solutions on how to promote green food consumption in the east.

1.3 Limitation

Our limitation is although we have reviewed some research in the field of green food consumption, there are still some professional methods to research deeply in this field. Another limitation is we just investigate consumers rather than producers. Further, the study is limited to the factors of consumers' buying behavior of green food.

1.4 Outline

There are eight chapters in this dissertation. Chapter 1 is the introduction of presenting reasons why we choose this topic, problem, purpose and limitations. Chapter 2 is the background of green food development and the consumption situation in the east. Chapter 3 includes relevant information from scientific papers about our topic and come up with related hypotheses in the third chapter. Chapter 4 we transform the collected information to data analysis through the questionnaire and prove the hypotheses with chi square tests. Chapter 5 is the results of questionnaire presented and different kinds of tables. Chapter 6 we describe the questions from our questionnaire. Chapter 7 is to give solutions to discuss and solve green food promotion. Chapter 8 we present the framework of the whole dissertation and give suggestions for future studies.

Ch. 02 Background

In this chapter, we deal with Chinese food categories, green food history and consumption in the east.

Nowadays, consumers have ability to choose various price levels of food, while they cannot be sure to know if it is safe (Bai, *et al*., 2007). Food safety now is the fundamental problem and consumers' requirements make them consider different categories of food. According to Paull (2008b), there are three food categories in China that carry certification. Commonly, green food and hazard-free food are Chinese standards; organic food is an international standard (Paull, 2008b). Owing to consumers prefer to purchase higher quality of food while organic food is very limited with expensive prices, therefore, there is a potential market for green food at the current stage. Green food can date from 1990. In that year, China's Ministry of Agriculture (MOA) created the green food program which is described as "one of the most successful eco-labeling programs in the world" (Paull, 2008a, p.48). The CGFDC which is supported by MOA, develops and maintains the standard, and is responsible for certifications, coordinates and inspections (Paull, 2008b).

In eastern China, there is strong income growth, rapid urbanization and urban crowding which are diversifying Chinese diet and creating demands for high-value and specialty food products (Gale *et al*., 2002). It is argued here that consumers in the east are willing to buy green food and even greater price fluctuations are reported for green food than normal food, because they think it is safer (Paull, 2008b).

In our opinion, consumers are not enough awareness of buying green food. The best and the most direct method to promote green food consumption is to increase consumers' weak awareness. We adopt a questionnaire with statistics to analyze data and to make suggestions on how to improve green food consumption.

Ch. 03 Literature Review

In this chapter we will situate our argument in the literature on relevant topics for the purpose of this dissertation and finally we put forward hypotheses. The literature review deals with Chinese agriculture, definition of green food, factors affecting green food consumption and promotion.

After presenting the problem of our dissertation, we introduce the background of the topic, extend this information following from related scientific articles.

3.1 Agriculture in China

Since 1995 China has passed the period of food shortages and come to a new era of keeping self-sufficient. More and more people are not worried about lack of food (Bian, 2013). In 2008, Chinese agriculture occupied about 122 million hectares. Organic food, green food and hazard-free food totally account for 28%, constituting 3%, 8% and 17%, respectively. The other food is 72% collectively. Out of the 34.18 million hectares of eco-food production, organic food accounts for 9.1%, green food 29.3% and hazard-free food represents 61.6%. (Paull, 2008b).

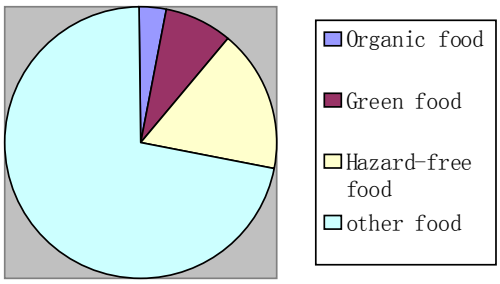


Figure 1: Distribution of Organic, Green, Hazard-Free food relative to the total (122m ha) supply of cultivated land in China. (Roundedto nearest whole number %); (Data sources: Paull, 2008b).

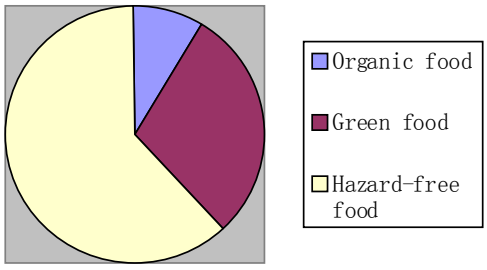


Figure 2: Three styles of China eco-labeling food, by hectares (Data source: Paull, 2008b).

At the same time, Chinese farms reflect China's food safety issues. China has one of the world's highest rates of chemical fertilizer users. Farmers rely on overuse which causes food safety problems (Calvin, *et al*., 2006). Some would argue that food safety and environmental issues are related to food growing, process and production. Thus, green food consumption can be helpful not only to environmental protection but also to benefit consumers' health.

3.2 Green food

As Wu, *et al*. (2011, p. 520) argue the definition of green food is "it is the kind of food nurtured under conditions without pollution, with organic fertilizer, and excluding poisonous pesticides with high residues". There are different kinds of green food, for example, vegetables, meats, fruits and so on.

According to Paull (2008b), green food appears to be more popular and easily accepted by Chinese consumers through good market spread, clear labels and better distribution. The data show green food growth from 1997 to 2007 has been substantial: green food hectares expanded from 2.14 million hectares to 10 million hectares, green food output grew from 6.3 to 72 million tons and the numbers of green food enterprises have risen from 544 to 5315. "There are two grades of green food: grade A (allowing use of certain amount of chemical materials) and grade AA (all chemicals are prohibited to be used in the production process)". Therefore, Chinese green food AA is equivalent to organic food (Paull, 2008b; Ying, *et al*., 2006).

According to Hu, (2011), the regulation of green food producing places is strict and monitored by Chinese Agriculture Department. For instance, they should be far away from factories, avoid residential areas, be in an ecological environment and have water resources. Heilongjiang, Fujian and Jiangsu Provinces etc. are outstanding in producing green food (Hu, 2011).

3.3 Factors which affect green food consumption

3.3.1 Introduction

It is a complex process to research consumers' buying behavior. This concept refers to "the study of psychological, social and physical actions when people buy, use and dispose products, services, ideas and practices" (Luu, *et al*., 2012, p. 29). Consumers' buying behavior is also based on backgrounds, such as their ages, education levels, incomes, knowledge, information and exposure to advertisements, etc. All these factors influence consumers' decisions more or less and provide them with a positive attitude to choose green food (Rezai, *et al*., 2011). Our dissertation mainly considers personal individual conditions: income levels, education levels and ages.

3.3.2 Income levels

Consumers pay attention to higher food quality with increasing income, such as the growth of the middle class in China (Zhu, *et al*., 2012). Our arguments build on the work of Gale, *et al.* (2002) who claim that income growth is likely to boost food demand considerably in China. According to Rezai, *et al*. (2011), because the price of green food is 10 to 50% higher than the normal food, middle and high income consumers are likely to afford to buy it (Rezai, *et al*., 2011). The argument in this dissertation draws on the differences between income levels and frequency of buying green food in the east. The east has most of the developed provinces, consumers' income levels mostly is higher than in other parts of China.

> H_0: There will be no difference between frequencies of buying green food and income levels.
> H_1: There will be differences between frequencies of buying green food and income levels.

3.3.3 Education levels

Consumers with higher education are more likely tend to buy green food. This is due to the fact that they are more aware of the advantages of the health aspects as well as the fact that there is little or no use of chemicals. Simultaneously, it means there is not enough environmental and green consumption education of the public in China (Zhu, *et al*., 2012; Rezai, *et al*., 2011). The argument in this dissertation draws on the differences between education levels and frequency of buying green food in the east.

> H_0: There will be no difference between frequencies of buying green food and education levels.
> H_1: There will be differences between frequencies of buying green food and education levels.

3.4 Promotion

In order to promote consumers' buying green food intention, it is necessary to do promotion activities. Others have argued high purchasing convenience tends to more likely bring green food consumption (Zhu, *et al*., 2012). Certainly, a good green food selling channel is an important reason for green food consumption. A previous study shows that 30% of consumers

cannot translate their green food consumption intention into real purchases due to purchasing inconvenience (Young *et al*., 2010). Zhu, *et al*. (2012) argue that food producers need to seek more convenient channels for consumers to buy green food. Meanwhile, governmental agencies need to provide policy supports to facilitate the creation of such selling channels. We also mainly study advertising which aims at attracting target consumers to either think about or react to the product. As a method of achieving advertisement goals, the content plays a vital role in the process of commercial communication (Kotler *et al*., 2005).

Besides the above hypotheses, an additional hypothesis is:

H_0: There will be no difference between frequencies of buying green food and ages.

H_1: There will be differences between frequencies of buying green food and ages.

Ch. 04 Empirics

This part contains the dissertation's empirical methods. It includes the statistic of our hypotheses and provides related tables.

We come up with hypotheses in previous chapter and collect information transform to data through chi square tests.

4.1 Empiric methods

4.1.1 Research design

According to Saunders *et al*. (2009), most often, the research purpose use three research methods, exploratory studies, descriptive studies and explanatory studies. Exploratory study is a valuable means of understanding a problem, like searching for literature. Descriptive study concentrates on representing an accurate profile of persons, events or situations. It is necessary to have a clear frame on which you collect data. The emphasis of explanatory study is on studying a condition of problem and explaining the relationships between variables (Saunders *et al*., 2009).

In our dissertation, we focus on explanatory study. The objective of our data collection and statistics test are to find relationships between different variables on consumers' buying behavior and green food consumption.

4.1.2 Research strategy

There are five different research strategies that can be used for a study. These are experiment, survey, case study, action research and ethnography (Berkeley, 2004). For our dissertation, we use a survey strategy with a self-completion questionnaire to consumers. We focus on the relationship between variables and show relationships through statistical tests on quantitative data. Two research methods are combined in this dissertation: quantitative and qualitative. But we mainly use quantitative since the qualitative is used to explain and support our analysis.

4.2 Data collection

According to Saunders *et al*. (2009), there are two different types of data, primary data and secondary data. Primary data is conducted and collected specifically for the research project. Secondary data is used for a research project based on originally collected from other ways

(Saunders, *et al*., 2009). Both two types of data we use in this dissertation.

The primary data we collect through the questionnaire. We designed a questionnaire to pretest on six consumers with different backgrounds in terms of ages, education levels and family income levels. Those respondents reviewed our questionnaire to provide comments whether each question is easily understood and what are plus or minus. Based on their comments, we did minor modifications, e.g. respondents were confused about the income if it is individual or family. We developed open and closed questions, such as, multi-choices, five-point scale measurement (1 is never, 5 is always) and one open question.

The secondary data we collected from several Chinese official websites to learn more about government departments' measures of green food. Certainly, we read articles which are related to the topic of consumers' buying behavior, food promotion etc. What is more, we also use books to help us to write about empirics.

4.3 Empiric findings

Through the method of Argesti & Finlay (2009), we suppose 40% in eastern China buy green food. We want to construct a 95% confidence interval with a margin of error that is equal to 10%.

$$\text{Statistic test:} \quad Z\sqrt{\frac{(1-\pi)}{n}} = \text{M}$$

$$1.96^2 * (0.6*0.4) = 0.1^2 * \text{n} \rightarrow \text{n}=92$$

When confidence interval equals to 95%, Z equals to 1.96. (Argesti & Finlay, 2009)
According to the calculation, the required sample size is 92.

We choose to send out our questionnaire through internet chat tools and some public websites since we could not contact Chinese consumers directly. On one hand, some people who have online shops help us give the questionnaire link to random customers. On the other hand, some of them print questionnaire copies to ask people who they met randomly in street, workplaces and communities, etc. We have collected 94 answers, among them there were 3 respondents who did not give clear answers about where they lived in China, but it did not much affect our data analysis. All the answers reflect 8 provinces and 2 municipalities, such as Beijing, Shanghai, Zhejiang and Jiangsu, etc. Among 94 respondents, 53 are female and 41

are male with different income and education levels and ages.

4.4 Hypothesis

Based on the literature review we come up with three hypotheses and use the chi square tests to investigate all three hypotheses. We set significance level at 5%, if the statistics we calculate is below it, that we can conclude there will be differences between variables.

4.4.1 Hypothesis 1

Table 4.1 summarizes the frequency of buying green food with income levels. It also shows in italics the number of subjects who might be expected to have scored in each of the BDI categories when H_0 is true.

Table 4.1. In 2013 the amount of consumers buying green food at different income levels.

	Frequency of buying Green food						
		A	**B**	**C**	**D**	**E**	∑
Income levels	**1**	0	6	10	8	1	25
	2	0	5	12	10	1	28
	3	0	4	4	7	0	15
	4	0	3	5	18	0	26
	∑	0	18	31	43	2	94

Codes: 1= ⩽ 4000 RMB, 2= 4001-7000 RMB, 3= 7001-9999 RMB, 4=≥ 10000 RMB
A=Never, B= Occasionally, C=Half, D= Frequently, E=Always

Because a few expected values are less than 5, we get an adjusted table list below.

	Frequency of buying Green food				
		A + B + C		**D + E**	∑
Income levels	**1**	16 *13.03*		9 *11.97*	25
	2	17 *14.60*		11 *13.40*	28
	3+4	16 *21.37*		25 *19.63*	41
	∑	49		45	94

i. Null hypothesis.

H_0: There will be no difference between frequencies of buying green food and income levels.

H_1: There will be differences between frequencies of buying green food and income levels.

ii. Statistic test.

$$\chi^2 = \frac{\sum (fo-fe)^2}{fe}$$

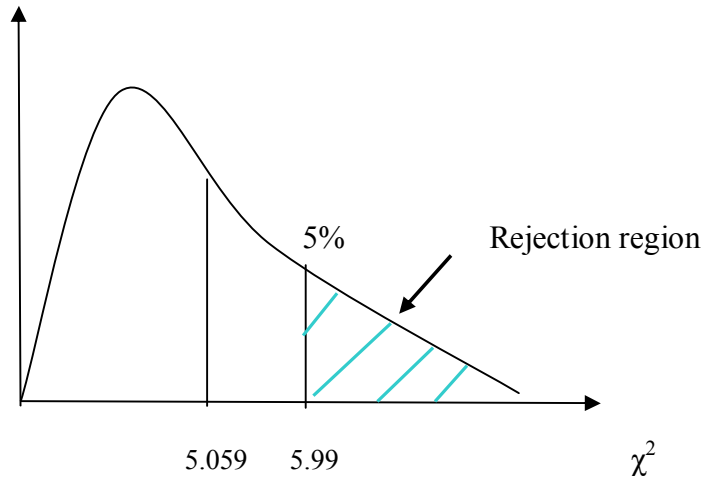
iii. Significance level. 5%

iv. Sampling distribution.

$$\chi^2 = \frac{\sum (fo-fe)^2}{fe} = \frac{(16-13.03)^2}{13.03} + \ldots + \frac{(25-19.63)^2}{19.63} = 0.676 + \ldots + 1.47 = 5.059$$

df=(2-1)*(3-1)=2

v. Rejection region.



(Data source: Argesti & Finlay, 2009)

5.059 ＜ 5.99⟶ P-value 〉 5% ⟶ Accept H_0

vi. Decision.

When significance level is 5%, we cannot prove there will be differences between frequency of buying green food and income levels.

4.4.2 Hypothesis 2

Table 4.2 summarizes the frequency of buying green food with education levels. It also shows in italics the number of subjects who might be expected to have scored in each of the BDI categories when H_0 is true.

Table 4.2. In 2013 the amount of consumers buying green food at different education levels.

	Frequency of buying Green food						
Education levels		**A**	**B**	**C**	**D**	**E**	∑
	1	0	7	4	2	0	13
	2	0	2	5	2	1	10
	3	0	7	23	38	1	69
	4	0	0	0	2	0	2
	∑	0	16	32	44	2	94

Codes: 1= ⩽ Middle school 2= High school 3= College / University 4= ⩾ Master
A=Never, B= Occasionally, C=Half, D= Frequently, E=Always

Because a few expected values are less than 5, we get an adjusted table list below.

	Frequency of buying Green food				
Education levels		**A + B + C**		**D+ E**	∑
	1+2	18 *11.74*		5 *11.26*	23
	3+4	30 *36.26*		41 *34.74*	71
	∑	48		46	94

i. Null hypothesis.

H_0: There will be no difference between frequencies of buying green food and education levels.

H_1: There will be differences between frequencies of buying green food and education levels.

ii. Statistic test.

$$\chi^2 = \frac{\sum (fo-fe)^2}{fe}$$

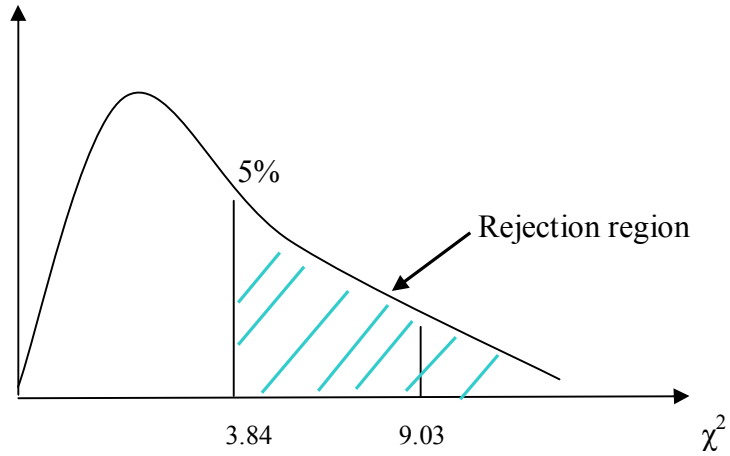
ii. Significance level. 5%

iii. Sampling distribution.

$$\chi^2 = \frac{\sum (fo-fe)^2}{fe} = \frac{(18-11.74)^2}{11.74} + \ldots + \frac{(41-34.74)^2}{34.74} = 3.34 + \ldots + 1.128 = 9.029$$

df =(2-1)*(2-1)=1

iv. Rejection region.



(Data source: Argesti & Finlay, 2009)

3.84 ＜ 9.03 ⟶ P-value ＜5% ⟶ Reject H_0

v. Decision.

When significance level is 5%, there will be differences between frequencies of buying green food and education levels.

4.4.3 Hypothesis 3

Table 4.3 summarizes the frequency of buying green food with ages. It also shows in italics the number of subjects who might be expected to have scored in each of the BDI categories when H_0 is true.

Table 4.3. In 2013 the amount of consumers buying green food at different ages.

	Frequency of buying Green food						
Ages		**A**	**B**	**C**	**D**	**E**	∑
	1	0	2	11	23	0	36
	2	0	5	12	15	1	33
	3	0	5	5	5	1	16
	4	0	5	3	1	0	9
	∑	0	17	31	44	2	94

Codes: 1= ≤ 24 2= 25-40 3= 41-60 4= ≥ 61
A=Never, B= Occasionally, C=Half, D= Frequently, E=Always

Because a few expected values are less than 5, we get an adjusted table below.

	Frequency of buying Green food				
Ages		**A+B+C**		**D+E**	∑
	1+2	30 *35.23*		39 *33.77*	69
	3+4	18 *12.77*		7 *12.23*	25
	∑	48		46	94

i. Null hypothesis.

H_0: There will be no difference between frequencies of buying green food and ages.

H_1: There will be differences between frequencies of buying green food and ages.

ii. Statistic test.

$$\chi^2 = \frac{\sum (fo-fe)^2}{fe}$$

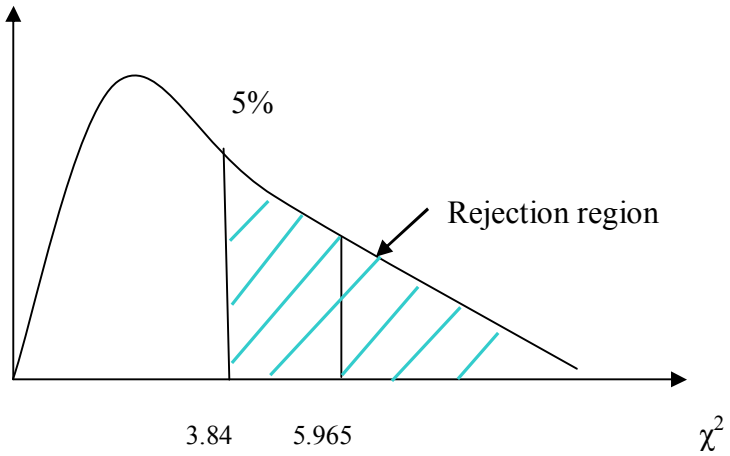
iii. Significance level. 5%

iv. Sampling distribution.

$$\chi^2 = \frac{\sum (fo-fe)^2}{fe} = \frac{(30-35.23)^2}{35.23} + \ldots + \frac{(7-12.23)^2}{12.23} = 0.776+\ldots+2.237=5.965$$

df=(2-1)*(2-1)=1

v. Rejection region.



(Data source: Argesti & Finlay, 2009)

3.84 < 5.965 ⟶ P-value <5% ⟶ Reject H_0

vi. Decision.

When significance level is 5%, there will be differences between frequencies of buying green food and ages.

Ch. 05 Results

In this chapter we depict the results of the questionnaire with statistical tests, cross tabulations and frequency tables.

According to answers of questionnaire collected, we use SPSS make different tables to display results.

5.1 Results of hypothesis

Table 5.1. Percentages on family income levels and frequency of buying green food.

			Frequency				Total
			Occasionally	Half	Frequently	Always	
Income levels (per month)	less than 4000 RMB	Count	6	10	8	1	25
		% within income level	24,0%	40,0%	32,0%	4,0%	100,0%
	4001-7000 RMB	Count	5	12	10	1	28
		% within income level	17,9%	42,8%	35,7%	3,6%	100,0%
	7001-9999 RMB	Count	4	4	7	0	15
		% within income level	26,7%	26,7%	46,6%	0,0%	100,0%
	more than 10000 RMB	Count	3	5	18	0	26
		% within income level	11,6%	19,2%	69,2%	0,0%	100,0%
Total		Count	18	31	43	2	94
		% within income level	19,1%	33,0%	45,8%	2,1%	100,0%

We analyze statistics on income levels and the frequency of buying green food through cross tabulation. Table 5.1 shows different degrees of buying green food with different income levels. We divide the two sections about frequency of buying green food into levels. One is negative and the other is positive. Negative includes three levels, never, occasionally and half, positive includes frequently and always.

Table 5.1 shows the 25 out of 94 respondents whose family incomes are less than 4000 RMB where 64 percent are negative and 36 percent are positive. 28 out of 94 respondents' family incomes are between 4001-7000 RMB, 60.7 percent is negative and 39.3 percent is positive.

In addition, 15 out of 94 respondents' family incomes are between 7001-9999 RMB. At this level, negative occupy 53.5 percent and positive is 46.6 percent. With the 26 out of 94 respondents' whose family incomes are more than 10000 RMB, 30.8 percent are negative and 69.2 percent are positive, respectively.

Table5.2. Percentages on education levels and frequency of buying green food.

			Frequency				Total
			Occasionally	Half	Frequently	Always	
Education levels	Middle school lower	Count	7	4	2	0	13
		% within education level	53,8%	30,8%	15,4%	0,0%	100,0%
	High school	Count	2	5	2	1	10
		% within education level	20,0%	50,0%	20,0%	10,0%	100,0%
	Bachelor degree	Count	7	23	38	1	69
		% within education level	10,1%	33,4%	55,1%	1,4%	100,0%
	Master higher	Count	0	0	2	0	2
		% within education level	0,0%	0,0%	100,0%	0,0%	100,0%
Total		Count	16	32	44	2	94
		% within education level	17,0%	34,1%	46,8%	2,1%	100,0%

We analyze the statistics on education levels and the frequency of buying green food through cross tabulation. Table 5.2 shows different degrees of buying green food with different education levels. We also divide the two sections about frequency of buying green food with these statistics. One is negative and the other is positive. Negative includes never, occasionally and half, positive includes frequently and always.

Table 5.2 shows the 13 out of 94 respondents at the education levels lower than middle school tested our questionnaire. 84.6 percent reflects negative and 15.4 percent are positive. The 10 out of 94 respondents who have high school education levels account for 70 percent negative and 30 percent positive. In contrast, the 69 out of 94 respondents who have bachelor degrees 56.5 percent are positive. The 2 out of 94 respondents who have master degrees or higher both reflect a positive attitude to buying green food.

Table 5.3. Percentages on ages and frequency of buying green food.

			Frequency				Total
			Occasionally	Half	Frequently	Always	
Ages	24 younger	Count	2	11	23	0	36
		% within age	5,6%	30,6%	63,8%	0,0%	100,0%
	25-40	Count	5	12	15	1	33
		% within age	15,2%	36,4%	45,4%	3,0%	100,0%
	41-60	Count	5	5	5	1	16
		% within age	31,25%	31,25%	31,25%	6,25%	100,0%
	61 older	Count	5	3	1	0	9
		% within age	55,6%	33,3%	11,1%	0,0%	100,0%
Total		Count	17	31	44	2	94
		% within age	18,1%	33,0%	46,8%	2,1%	100,0%

We analyze statistics on ages and the frequency of buying green food through cross tabulation. Table 5.3 shows different degrees of buying green food with different ages. We still divide the two sections about frequency of buying green food into levels. One is negative and the other is positive. Negative includes three levels, never, occasionally and half, positive includes frequently and always.

Table 5.3 shows respondents who are younger than 24 make up 36 out of 94. 63.8 percent of the respondents are positive, 36.2 are negative. However, among the 33 out of 94 respondents who are between 25-40 years old 51.6 percent have a negative attitude and 48.4 percent have a positive. Among the 16 out of 94 respondents who are between 41-60 years old 62.5 percent are negative, and 37.5 percent positive. Among the 9 out of 94 respondents are older than 61, there are 88.9 percent respondents who are negative and 11.1 percent who are positive.

5.2 Results of other questions

Food quality

Table 5.4. Percentage of consumers considering food quality.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Occasionally	8	8,5	8,5	8,5
	Half	15	16,0	16,0	24,5
	Frequently	28	29,8	29,8	54,3
	Always	43	45,7	45,7	100,0
	Total	94	100,0	100,0	

Table 5.4 shows that 43 out of 94 respondents think they always consider food quality when they buy food. 29.8 percent, 16 percent and 8.5 percent of respondents will frequently, half and occasionally consider food quality when they buy food, respectively.

Knowledge of green food

Tables 5.5. Percentages of consumers knowing green food.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all	5	5,3	5,3	5,3
	A little	31	33,0	33,0	38,3
	Much	50	53,2	53,2	91,5
	Quite much	6	6,4	6,4	97,9
	Very much	2	2,1	2,1	100,0
	Total	94	100,0	100,0	

Table 5.5 shows a phenomenon happening in China that some consumers buy green food even if they do not know what it is. We designed a question “How much do you know about green food”, only 2 respondents answer they know green food very much and 6 respondents quite much. Respondents who make up 53.2 percent know much and 33 percent know a little of green food. There are also 5 out of 94 respondents who do not understand green food at all.

Where consumers prefer to buy green food

Table 5.6. Percentages of the places where consumers prefer to buy green food.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Super market	51	54.3	54.3	54.3
	Exclusive store	13	13.8	13.8	68.1
	Farmers' market	26	27.7	27.7	95.8
	Online store	1	1.0	1.0	96.8
	Others	3	3.2	3.2	100,0
	Total	94	100,0	100,0	

It is easy for us to understand which place needs to concentrate on promotion. Table 5.6 shows the majority of respondents are more likely to purchase green food in the supermarket, the percent is 54.3. 26 out of 94 respondents choose to buy green food in farmers' markets. There are a few respondents who prefer to buy green food in exclusive stores and online stores. The percent is 13.8 and 1.0, respectively. Moreover, three respondents suggest buying green food from farm producers directly.

Whether convenient to buy green food for consumers

Table 5.7. Percentages of whether it is convenient to buy green food.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all	5	5,3	5,3	5,3
	A little convenient	39	41,5	41,5	46,8
	Convenient	38	40,4	40,4	87,2
	Quite convenient	6	6,4	6,4	93,6
	Very convenient	6	6,4	6,4	100,0
	Total	94	100,0	100,0	

Table 5.7 shows that 5 out of 94 respondents think it is not convenient for them to buy green food at all when they answered question "Do you think it is convenient to buy green food for consumers". However, 6 of 94 respondents think it is very convenient for them to buy green food. Most respondents consider it is a little convenient to buy green food.

Whether consumers pay attention to promotion

Table 5.8. Percentages of whether consumers pay attention to green food promotion.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	9	9,6	9,6	9,6
	Occasionally	34	36,2	36,2	45,7
	Half	45	47,9	47,9	93,6
	Frequently	5	5,3	5,3	98,9
	Always	1	1,1	1,1	100,0
	Total	94	100,0	100,0	

We want to know how much people care about green food promotion. Table 5.8 shows 45 out of 94 respondents pay half attention to promotion of green food and only 1 out of 94 respondents always focus on it. The rest of them pay less attention to promotion of green food.

Current price of green food

Table 5.9. Percentages of consumers considering current prices of green food.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low	4	4,3	4,3	4,3
	Normal	45	47,9	47,9	52,1
	High	42	44,7	44,7	96,8
	Very high	3	3,2	3,2	100,0
	Total	94	100,0	100,0	

One important issue is the price of green food. Table 5.9 shows none of respondents think it is very low in buying green food, 4 out of 94 respondents think it is not high compared with 3 out of 94 respondents who think it is very high. 45 out of 94 respondents believe they could afford green food price but 42 respondents think the price is high.

Ch. 06 Analysis

In this chapter, based on the empirical statistics, we combine three factors with other related tables to get target consumers.

We get primary results of hypotheses above, and then we describe and make deeper analysis of other questions from the questionnaire.

6.1 Introduction

We collect a sample size that big enough for us to analyze the results of the questionnaire statistically. The method of analysis is explanatory to emphasize and transform information to data, test three factors and explain the relationship between green food consumption and the relevant factors. We analyze hypotheses results with chi square tests in the empiric chapter and mean values listed below to decide the promotion of green food consumption. We use SPSS software to calculate mean values and the standard deviation of each factor. Different mean values mean that the respondents regard the element as very important or not important. The statistical significance is used to evaluate the difference of opinions between the green food consumption and effective factors. We design a 1 to 5 scale to test the frequency of buying green food, 1 is never, 2 is occasionally, 3 is half, 4 is frequently and 5 is always.

6.2 Analysis of results

Factors of green food price, quality and taste

Table 6.1. Question 10 in questionnaire**.**

	Never	A little	Much	Quite much	Very much	Mean
Price of green food	1(1.06%)	14(14.89%)	46(48.94%)	20(21.28%)	13(13.83%)	3.32
Quality of green food	2(2.13%)	5(5.32%)	25(26.6%)	29(30.85%)	33(35.11%)	3.91
Taste of green food	1(1.06%)	9(9.57%)	31(32.98%)	30(31.91%)	23(24.47%)	3.69

The question is “When you purchase green food, to what degree do you care about the factors below”. The results of the table 6.1 reveal 13.83, 35.11 and 24.47 percent of the respondents consider price, quality and taste of green food very much, respectively.

Mean value of income levels

Table 6.2. The mean values of family income levels and frequency of buying green food.

Family income levels	Mean	Std. Deviation	Std. Error of Mean
Less than 4000 RMB	3,24	,831	,166
4001-7000 RMB	3,25	,799	,151
7001-9999 RMB	3,29	,825	,221
More than 10000 RMB	3,52	,753	,145
Total	3,33	,795	,082

Hypothesis 1 has been tested in table 4.1.

We assume income levels have a relationship with the frequency of buying green food directly. According to the result of the chi square test, there are no direct differences between family income levels and frequency of buying green food. Actually, in our opinion, income plays a significant role when consumers purchase green food. Table 6.2 shows the mean values of all the family income levels are similar. All of mean values are between 3 (3= half) and 4 (4=frequently). From this, we can show various family income levels do not have strong effects on the behavior of buying green food. It means family income levels do not affect green food consumption directly. Combined with Table 6.1 and Table 5.9, respondents consider price is not a key element and they can afford to buy at current price of green food.

Mean value of education levels

Table 6.3. The mean values of education levels and frequency of buying green food.

Education levels	Mean	Std. Deviation	Std. Error of Mean
Middle school lower	2,62	,768	,213
High school	3,30	,949	,300
Bachelor degree	3,45	,718	,086
Master higher	4,00	,000	,000
Total	3,33	,795	,082

Hypothesis 2 has been tested in table 4.2 which is how education levels affect green food consumption.

According to the result of the chi square test Table 6.3 shows the lower education levels the less green food consumption. At master or higher level, the mean value is 4 (4=frequently), it means they have a positive attitude to buying green food. In contrast, the lowest mean value 2.62 (2=occasionally, 3= half) is from middle school level respondents. So we focus on

promotion to consumers who have lower education.

Mean value of ages

Table 6.4. The mean value of ages and frequency of buying green food.

Ages	Mean	Std. Deviation	Std. Error of Mean
24 younger	3,58	,599	,097
25-40	3,35	,798	,143
41-60	3,12	,957	,239
61 older	2,56	,726	,242
Total	3,33	,795	,082

Hypothesis 3 has been tested in table 4.3 which is how ages affect green food consumption.

According to the result of the chi square test Table 6.4 shows the older the respondents the less likely to buy green food. All of the mean value of frequency of buying green food is less than 4 (4=frequently) that means every age level has a negative attitude to buying green food. Especially for respondents who are older than 61 the mean value is 2.56 (2=occasionally, 3= half), which means the buying power of green food for elders is much lower. So we focus on consumers who are older as our target.

Ch. 07 Discussion

In this chapter, we present various solutions to the problem of this dissertation and connect with the real situation in the east: government, producers and consumers.

According to the results and analysis from previous chapters, we find education levels and ages affect frequency of buying green food. Such results show elders and lower education level respondents are not willing to buy green food. Because of Chinese history, the current elders' education levels are lower generally. The fundamental and direct reason we think is most consumers do not have enough information about green food buying awareness. Based on that, we suggest the government department need to consolidate their environmental awareness. One of questions in our questionnaire is "Where you can get information about green food". 57.45 percent and 48.94 percent of the respondents get information from newspapers or TV and friends or relations, respectively. We suggest China Green Food Association could spread green food information to consumers' workplaces and communities through public service and green advertisements which support environmental protection and healthier diets. In addition, public organizations could cooperate with producers to organize some public benefit activities and lectures to involve elders as well present free green food samples for them to try.

The results indicate income levels and price do not have big influence of frequency of buying green food. Compared with that, consumers are more concerned with taste and quality. From respondents' answers to the open question, they hope green food development would more concentrate on its quality because there are some fakes in the market. Zhu, *et al*. (2012) claimed Chinese consumers are willing to pay 5–10% more for green food if the quality and taste of green food are guaranteed. In order to enhance green food market sustainable, the government is like an invisible hand to make the market stable. Our advice is Green Food Association need to strengthen supervision of green food, e.g. this organization should increase the frequency of checking product samples regularly. Meanwhile, they also need to monitor producers to explain the production process clearly and transparently to the public.

In table 5.6, more than half of the respondents buy green food in the supermarkets. Only 13 out of 94 respondents buy in the exclusive stores. In our opinion, sellers should open more original chain stores in bigger cities, it could form integrate management and selling, increase consumers' trust and confidence of green food. In order to sell green food more professionally,

producers could also train some professional sellers to ensure they understand green food very well. Similarly, supermarkets are still the biggest place where consumers prefer to buy green food. Producers can supply the products to supermarkets to ensure consumers demand. Besides, they could as well develop new channels to contact consumers, like supply directly to some schools, restaurants, hotels, hospitals, etc. From our questionnaire feedback, other kinds of food like organic food affect green food consumption. Our advice is increase the distinction of green food from other kinds of food. For example, producers can design some special package to deepen consumers' impression. Consumers more tend to buy green food if they see its' logo (Wei & Zeng, 2007). It is important to make the logo clearer.

Ch. 08 Conclusion

In the final part, we will conclude our research. First, we summarize the dissertation and then is the future research about development of green food consumption.

China has become industrial country, but at the same time environmental pollution has become very serious and lead to a lot of food safety problems. Therefore, Chinese people start to focus on high quality food. The need to improve consumption of green food is a goal that many Chinese food companies pursue. The main purpose of our dissertation is to investigate the consumers' buying behavior of green food. We chose three key factors which affect green food consumption which are income and education levels and ages. At first we tried to conduct an extensive literature review which primarily focused on the basic concepts about Chinese green food to learn more about the subject. Then, we investigated consumers' buying behavior in eastern China and there is already a lot of research in this field. We chose to base our dissertation on the models established by Zhu, *et al.* (2012), Gale, *et al.* (2002), Luu, *et al*.(2012), Rezai, *et* al. (2011) etc. these all illustrated the subject in different ways.

Through promotion we also want to let more and more people understand what real green food is and improve the consumption of green food. Based on our findings, it is important for elders and lower education level consumers to increase their knowledge about green food. We find out government, producers and consumers, these three elements, are related together. Sanders (2006) claim green food development has benefited from government encouragement, advice and technical support. Government policies affect producers and consumers' buying behavior and they change the relationship between demands and supply (Sanders, 2006).

8.1 Reliability

In this dissertation, we use reliability and validity to measure our research method. *Reliability* refers to different occasions or different researchers getting similar results with the research method (Saunders *et al*., 2009). We try to avoid four threats to reliability which are subject or participant error, subject or participant bias, observer error and observer bias. We create one factor from different aspects in order to avoid observer bias. In addition, before we hand out our questionnaire, we conduct a pretest which helps us to find mistakes for respondents. Secondly, we design an open question to get respondents point of views of green food accordingly.

8.2 Validity

The other measurement '*validity*' deals with if the results actually exist and it explains whether it intends to measure data collection method in practice (Saunders *et al*., 2009). There are six threats to validity: history, testing, instrumentation, mortality, maturation and ambiguity. In our research, we believe we have enough secondary data and relevant information included. Further, the questionnaire we designed to suit for the purpose we aimed at. However, due to the time and source restriction, we need to collect a large amount of samples in the future. Because we study in Sweden, we could not be close to Chinese consumers, producers and get the first material reflected by Chinese green food market.

8.3 Future study

For *future study* it is necessary to interview producers to get their views about green food development and how government subsidies can be benefit them. Investigating of wider perspective of competition from other kinds of food than what we describe briefly in this dissertation. What is more, it is interesting to have an investigation about green food development in western China.

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Appendices

Appendix 1: Questionnaire in English

Questionnaire of factors affect green food consumption in eastern area of China

Thank you very much for helping us accomplish the below survey! We are doing a survey about how to promote green food consumption in eastern China to complete our dissertation. Please answer the following questions individually. Choose the ranking according to your perception of the truthfulness of the statements. The whole questionnaire includes two sections. Your suggestions will be appreciated!

Section Ⅰ

We need some basic information about you, circle the letter.

1. Gender: A. Male B. Female

2. Your age: A. ≤24 B. 25-40 C. 41-60 D. ≥61

3. Your education level: A. Below middle school B. High school
C. College / University D. Above master

4. Which city do you live in China? _____.

5. What is your monthly family income?

A. ≤ 4000 RMB B. 4001-7000 RMB C. 7001-9999 RMB D.≥10000 RMB

Section Ⅱ

6. When you purchase food, to what extent do you think of the quality?

Never	Occasionally	Half	Frequently	Always
□	□	□	□	□

7. Consider your family income, which kind of food would you like to buy?

	Never	A little	Much	Quite much	Very much
Normal food	□	□	□	□	□
Green food	□	□	□	□	□
Organic food	□	□	□	□	□

8. How much do you know about green food?

Not at all	A little	Much	Quite much	Very much
□	□	□	□	□

9. To what extent do you buy green food?

Never	Occasionally	Half	Frequently	Always
☐	☐	☐	☐	☐

10. When you purchase green food, to what degree do you care about the factors below?

	Not at all	A little much	Much	Quite much	Very much
Price	☐	☐	☐	☐	☐
Quality	☐	☐	☐	☐	☐
Taste	☐	☐	☐	☐	☐

11. Where do you prefer to purchase green food?

A. Supermarket B. Exclusive store C. Farmer's market/Open fair

D. Online store E. Others_____

12. Do you think it is convenient to buy green food for consumers?

Not at all	A little	Convenient	Quite convenient	Very convenient
☐	☐	☐	☐	☐

13. Do you know where you can get information about green food?

A. TV B. Newspaper C. Radio D. Friends/Relatives E. Others_____

14. How much of your monthly family income are you willing to spend on green food?

A. ≤ 5% B. 6% -- 10% C. 11% -- 15% D. ≥ 16%

15. When you purchase green food, do you often pay attention to promotion?

Never	Occasionally	Half	Frequently	Always
☐	☐	☐	☐	☐

16. What do you think about quality, taste and selling service of Chinese green food?

	Very bad	Bad	Normal	Good	Very good
Quality	☐	☐	☐	☐	☐
Taste	☐	☐	☐	☐	☐
Selling service	☐	☐	☐	☐	☐

17. To what degree do you think about prices of Chinese green food?

Very low	Low	Normal	High	Very high
☐	☐	☐	☐	☐

18. What is your opinion about green food future development in China? (A brief description)

_____

If you have some questions or help for our research, please contact us freely!

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Thanks!

2013-04-21

Appendix 2: Questionnaire in Chinese

关于中国东部地区绿色食品消费的影响因素调查

首先非常感谢您参与我们的调查。我们正在搜集关于如何提高中国东部地区绿色食品消费的调查来协助我们毕业论文的完成。我们希望了解一下您对绿色食品消费的观点和哪些因素会影响您选择绿色食品。整个调查问卷分为一，二两部分。

第一部分：

首先我们想对您的一些基本个人信息进行了解。

1、您的性别： A：男　　B：女

2、您的年龄： A：≤24　B：25-40　C：41-60　D：≥61

3、您目前的文化水平：A：初中以下　B：高中　C：大学　D：研究生以上

4、您居住在中国哪个城市：_____

5、您家庭目前的月收入是？（人民币）

A：≤4000　B：4001-7000　C：7001-9999　D：≥ 10000

第二部分

6、当您购买食品时，您会考虑食品的质量问题吗？

从不考虑	很少	偶尔	经常	必须考虑
□	□	□	□	□

7、如果考虑到您的家庭收入情况，您更倾向于购买以下哪种食品？

	从来不买	很少买	偶尔买	经常买	每天买
无污染食品	□	□	□	□	□
绿色食品	□	□	□	□	□
有机食品	□	□	□	□	□

8、您对绿色食品了解多少？

完全不了解	很少了解	了解	很了解	非常了解
□	□	□	□	□

9、您会经常购买绿色食品吗？

从来不	很少	偶尔	经常	每天
□	□	□	□	□

10、当您购买绿色食品时，以下三种因素影响了您的购买吗？

	从来不	很少	一般	很多	有着决定性的影响
绿色食品的价格	□	□	□	□	□
绿色食品的质量	□	□	□	□	□
绿色食品的味道	□	□	□	□	□

11、您更喜欢在哪些地方购买绿色食品？

A：超市　B：绿色食品专卖店　C：菜市场　D：网购　E：其他_____

12、您认为您目前购买绿色食品方便吗？

非常不方便　不方便　方便　很方便　非常方便

□　□　□　□　□

13、您是通过哪些渠道获得绿色食品的信息？（可多选）

A：电视广告　B：新闻报纸　C：收音机　D：朋友或亲戚

E：其他：_____

14、绿色食品的花费大概占您家庭月收入总量的多少？

A：≤5%　B：6%-10%　C：11%-15%　D：≥16%

15、您会经常关注一些绿色食品的促销吗？

从不　很少　偶尔　经常　总是

□　□　□　□　□

16、您认为目前中国绿色食品的质量，味道和销售服务处于什么样的程度？

	非常糟糕	糟糕	一般	好	非常好
质量	□	□	□	□	□
味道	□	□	□	□	□
销售服务	□	□	□	□	□

17、您认为目前中国绿色食品的价格状况？

非常便宜　便宜　一般　贵　非常贵

□　□　□　□　□

18、对于中国绿色食品的今后发展您有那些建议？（简单的描述）

最后如果有什么疑问或需要我们的调查报告，请联系我们。

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再次表示感谢！！

二零一三年四月二十一号