

## Korean consumers' attitudes towards organic labels and country-of-origin of organic foods

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### Abstract

Although the South Korean organic food market is in the infancy compared to other industrialized countries, Korean consumers' interest in organic food and retail stores devoting space to organic products have been rapidly increasing. Despite the fact of organic food popularity, the term "organic" is interpreted differently by individuals. As opposed to the US, Japan and the EU where have operated an integrated organic food labelling system, Korea has adopted complex organic labelling systems regulated by several different government bodies. As a result, complicated food labelling standards make consumers confused when purchasing organic foods. Furthermore, in terms of country of origin (COO), it is argued by a lot of researchers that COO effects vary from product to product and from country to country; moreover, other informational cues such as brand and price can influence COO effects. In modern society, COO labelling has been complicated, due to the sourcing, manufacturing and market locations of merchandise spread over the world. Accordingly, the evaluation of COO effects has become complex. 1)

In order to examine these issues, a quantitative research was selected to classify the common features of organic food consumers and construct statistics such as the extent to which people are aware of organic food and COO labelling via a questionnaire which took place in two cities in Korea with a cluster sample of 161 organic food purchasers. As for the data analysis, one-way analysis of variance (ANOVA), T-tests, bivariate crosstulations with Cramer's V were conducted, depending on the characteristics of variables and the assumptions the research data need to fit.

It has been concluded that in general, Korean organic consumers comprehend the term "organic" in a closer way to the general concept rather than technical term, thus people do not appreciate environmentally labels which include organic food labels, although marital status influence the degree of label awareness, regardless of gender, age, education level and so on. Regarding COO effects on organic food, home organic products were Korean consumers' first choice over those from industrialized countries and developing nations. Specifically, in processed organic product category, domestically cultivated and processed organic products were absolutely preferred to leading national brands produced with imported ingredients and international brands. However, due to a lack of checks of ingredients' COO, consumers tend to purchase a leading national organic food brand, believing that it is a pure organic food sourced domestically.

As a consequence, this research has suggested some important managerial implications and future research directions. In order to prevent consumer confusion when buying organic foods, it should be noted that consumers do not comprehend the organic food certifications, due to complicated labelling systems for organic produce and processed organic foods. Therefore, government bodies related to organic food distribution have to know consumers' perception of organic food labels and the significance of customer-oriented labels and re-establish labelling standards. Similarly, public advertising should be followed to raise public awareness of the labelling to enable customers to have the correct information. In addition, not only international marketers but also domestic marketers need to understand COO images and also the influence COO of ingredients has on the image of an organic product.

Key-words: consumer attitude, organic food, country-of-origin, food labels

I. Introduction

### I. Introduction

In terms of organic market size and scale, unlike other developed countries in Western Europe and North America, the value of the Korean organic market is in its infancy (USDA, 2006). While the UK organic market totaled approximately £8 billion in 2002 (Oh and Philips, 2003), South Korea's total market was estimated at £500 million in 2004 for environmentally-friendly products which include organic foods (Oh and Philips, 2005). However, USDA standing for United States Department of Agriculture (2002) suggests that allowing for the amount of space dedicated to organic foods in Korean retail stores, the future of the segment looks promising. Nevertheless, it is the fact that there is little attention to illustrating consumer behaviors buying organic foods in Korea.

It should be noted that the labelling system of finished foods is controlled by Korean Food and Drugs Administration (KFDA, 2008), while the labelling requirements for fresh agricultural products and grain including organic produce are regulated by the Ministry of Agriculture and Forestry (MAF). Under the Environmentally-Friendly

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Agriculture Promotion Act (EAPA) established by KFDA, 4 labels were used for environmentally-friendly produce depending on the amount of chemicals and fertilizer used; Organic Products, Transitional Organic Products, No Agricultural Chemicals and Low Agricultural Chemicals, as opposed to other developed countries such as the US, EU and Japan legislating a single label for unprocessed organic food (USDA, 2006; Lee, 2005). With regard to processed organic products, they are classified into four labels by the percentage of the organic ingredients used but they are all allowed to use the term "organic" on the package (USDA, 2006), together with country-of-origin (COO) label (KFDA, 2008). Complicated labelling system for agricultural products, however, plays a negative role in making customers understand the term, "organic" clearly and other food labels since the labelling systems have been set and maintained by several different government bodies (Lee, 2005).

Despite the fact that many authors paid their attention to consumers buying organic foods, there is little interest in identifying the relationship between organic food buying and COO effects. In addition, previous studies on COO have predominantly concerned with high-involvement merchandise (e.g. TV and automobiles) and post-industrialized and service-oriented economies such as North America and Western Europe, whereas COO effects on agricultural products have been under-researched (Ahmed et al. 2004).

The research aim is, therefore, to examine the degree to what consumers comprehend environmentally-friendly agricultural food labels and evaluate the extent of the influence of COO on the customer's decision making when buying organic foods, exploring the demographic profiles of organic product customers. This study begins with literature review based on previous researches. In the next section, we describe a research methodology and discuss findings. Finally, the conclusion and implications will be noted.

## II. Literature review

From the customers' perspective, consumer food purchase patterns are significantly changing owing to considerable health and food safety concerns, environmental issues, and food quality and nutrition (Tsakiridou et al., 2008). Before starting, it is necessary to look at the definition of the term "organic", because consumers are bombarded with numerous marketing buzzwords describing health food such as organic food, natural food, whole food, environmentally-friendly products, sustainable products and green products.

Taskiridou et al. (2008) defined the word, "organic food" as those made through environment-friendly production process, and cultivation techniques that consider both the attributes of the final products and the production methods, while DEFRA (Department for Environment, Food and Rural Affairs) in the UK in 2008 considers it as foods produced without synthetic fertilizers or pesticides, using most natural cultivation methods to maintain the best possible soil condition for organic produce. At present, there is no globally standardised definition of its concept. Many countries such as the United States, Japan and EU nations, therefore, have regulated the use of the word

'organic' legally (Hungrymonster, 2008).

On the other hand, the Korean government grouped environmentally-friendly agriculture labels into four categories: (1) organic products, (2) transitional organic agricultural products, (3) no agricultural chemicals, and (4) Low agricultural chemicals, in the past, although the transitional organic agricultural product label was recently removed. The "organic food" label is granted to the products whose ingredients are entirely cultivated without chemicals for three years according to the Environmentally-friendly Agriculture Promotion Act (USDA, 2006), which is similar to the concept of other countries. The phrase "environmentally-friendly" synonymous to "eco-friendly" or "nature friendly" has been used to describe goods or services produced to lower a negative impact on the environment. Universally accepted definition has not been made yet, whereas some countries such as Canada and the EU have a system to approve the label (Negel's eco store, 2008).

The term "natural" has known for products that do not contain artificial ingredients, synthetic colors and chemical preservatives, and are processed or refined as little as possible before consumed (USDA, 2006). Roehl (1996) proposes that the term "natural" is generally interchangeable with "whole food" – "food obtained from natural, not artificial or synthetic, sources". Food Marketing Institute (2007) highlighted that the term "natural" is not controlled by the government beyond the regulations and health codes applicable to all foods apart from meat and poultry in the United States which should be free of artificial coloring, sweetening and flavoring ingredients, and preservatives and "natural" labeled meat, and that poultry products do not guarantee how those foods were reared, whereas "organic" food should meet or exceed a strict set of standards ranging from the food itself to farming methods of how the sources of the food are produced. The definitions of many health-related terms are summarized at the below Table 1.

### 1. Consumer perceptions of organic food

Customers regard organic foods as being healthier (e.g. Essoussi and Zahaf, 2008; Tsakiridou et al., 2008; Fotopoulos and Krystallis, 2002), more nutritious (e.g. Essoussi and Zahaf, 2008; Tsakiridou et al., 2008; Fotopoulos and Krystallis, 2002; Vindigni et al., 2002), safer (e.g. Essoussi and Zahaf, 2008; Vindigni et al., 2002), tastier (e.g. Essoussi and Zahaf, 2008; Fotopoulos and Krystallis, 2002) and environmentally-friendly (e.g. Essoussi and Zahaf, 2008; Tsakiridou et al., 2008; Fotopoulos and Krystallis, 2002; Vindigni et al., 2002) than their traditionally grown counterparts. By contrast, customers are less likely to buy them, due to unwillingness to pay more, reluctance to spend time and effort, unawareness of better quality of organic food, lack of choice and lack of awareness of organic farming (e.g. Essoussi and Zahaf, 2008; Vindigni et al., 2002). Moreover, many authors argued that consumer attitudes towards organic food were influenced by socio-demographic factors such as sex, age, level of education, income and the presence of children in the household (e.g. Essoussi and Zahaf, 2008; Tsakiridou et al., 2008; Fotopoulos and Krystallis, 2002).

&lt;Table 1&gt; Definition of various health food terms

Term	Definition
Organic Food	Food produced without synthetic fertilizers or pesticides using most natural cultivation methods. Contemporarily, organic food more associated with certification is produced according to certain production standards regulated by law.
Natural Food	Food cultivated or reared with no artificial, synthetic and chemical sources, and processed or refined as little as possible before consumed. No legal definition.
Whole Food	Interchangeable with natural food.
Sustainable Food	Food processed and traded in a way that contributes sustainable livelihoods. No legal definition.
Environmentally-friendly Food	Synonymous to "eco-friendly" or "nature friendly". Goods or services produced considering to lower a negative impact on the environment. Some countries have environmentally-friendly labels approved.
Green Products	Goods produced to provide the most efficient use of natural resources, aiming to reduce negative effects on the environment

Source: adapted from Centre for Environmental Education (2008), Negel's eco store (2008), Soil Association (2008), Sustain (2008), DEFRA (2006), USDA (2006), and Roehl (1996).

While women frequently purchase organic products (Tsakiridou et al., 2008), men pay more for organic food than women (Fotopoulos and Krystallis, 2002). With regard to age, younger people are more interested in the issues of the environment but cannot afford to purchase organic foods, due to lower income, whereas old people are more health conscious and have more buying power, owing to their higher disposable income (Essoussi and Zahaf, 2008; Tsakiridou et al., 2008; Fotopoulos and Krystallis, 2002). The level of education has a significant effect on organic food purchase: people with higher education require more information about organic food production and are willing to pay more (Tsakiridou et al., 2008). In addition, an income factor is also considered as one of key factors, that is, the higher the income level, the more likely people have relatively positive perception of organic products and buy organic foods (e.g. Tsakiridou et al., 2008). On the contrary, Fotopoulos and Krystallis (2002) stated that the income level just affected the quantity of organic food purchased, but not willingness to buy, and higher disposable income does not mean greater possibility of organic food consumption. Furthermore, it is demonstrated that household size has been positively correlated to the purchase of organic food but as children are growing older, there is lower propensity to consume organic food (Tsakiridou et al., 2008; Fotopoulos and Krystallis, 2002). Nevertheless, it should be noted that the significance of individual characteristics appears to be country specific and time specific (e.g. Tsakiridou et al., 2008).

## 2. Food labelling

While food labelling in the early 20th century began along with an aim to protect consumer right (Label Legacy, 2008), it has

changed under legislations developed by governments, in order to help consumers have accurate information for the products over decades (Food Standards Agency, 2008). In addition, the food labelling standards differ from country to country, depending on the degree of governmental regulation (Lesmills, 2008). Similarly, Korean government has legally forced manufacturers to display the followings: (1) product name, (2) product types, (3) manufacturer's name and address, (4) Manufacturing date, month, and year, (5) sell-by-date, (6) contents, (7) ingredients, (8) nutrients, and (9) other items, on food packaging label, including organic foods (USDA, 2003). In addition to these requirements, country-of-origin (COO) need to be displayed on the packaging label of food products distributed in Korea.

The increasing number of customers who are interested in healthy eating have encouraged producers and retailers to display a variety of information related to food products on packaging labels (Smith, 1993), such as expiry dates, storage, nutrition facts, ingredients, claims, and the like (Abbott, 1997). Generally speaking, food labelling has been defined as "use of written, printed, or graphic materials upon or accompanying a food or its containers or wrapper", which includes ingredients, nutritional information, warnings and other useful information (CancerWeb, 1998), while Food Standards Agency (2008) defined food labels from a more practical and contemporary viewpoint as "a useful source of information, primarily to inform and protect consumers".

Organic food production is regulated by law, and so producers should take organic certifications in order to retail food as organic goods in many industrialized countries, such as the United States, the European Union and Japan (USDA, 2006). Similarly, Korean processed organic products must be based on the percentage of organic ingredients in a product, which parallels US organic labelling requirements, as seen in Table 2. On the other hand, products containing 70 to 90% organic ingredients are not regarded as organic foods in the UK under EU regulations (Bicknell, 2003). Unlike the US label standard, organic produce categories were classified to four color-coded symbols under Environmentally-Friendly Agriculture Promotion Act (Oh and Philips, 2003), but recently reduced by three labels by the Ministry of Agriculture and Forestry (MAF) to correspond to other industrialized countries' standards (USDA, 2006), as seen in Table 3. It is worthy of examining not only whether these labels work well for Korean customers but also how much they understand the word "organic" which are amongst this study's objectives.

&lt;Table 2&gt; Processed organic food classification

Processed Organic	Description
100% Organic	Pure organic food made of or from 100% certified organic ingredients.
Organic - on main label	More than 95% certified organic ingredients should be contained in a product with a view to print "organic" on the main label. The percentage of each organic ingredient must be indicated on the ingredient listing.
Organic - not on main label	A food containing 70-95% organic ingredients can make organic claim somewhere but not on the main label. The percentage of each organic ingredient must be indicated on the ingredient statement and an

	ingredient should be from either of them – an organic or a non-organic source.
Listing	As for less than 70% organic ingredients, they can be listed in the ingredient panel but the final product is certified by checking whether it is processed with the organic ingredients indicated on the ingredient panel.

Source: adapted from USDA (2006), Oh and Phillips (2005), and Brehm and Morgan (2003).

<Table 3> Environmentally-friendly Agriculture Labels

Label	Description
Organic Product	Produce cultivated with no chemicals and fertilizer for 3 years.
Transitional Organic Agricultural Product	Produce cultivated with no chemicals and fertilizer for 1 year which is considered transitional. (this label was recently removed)
No Agricultural Chemicals	Produce cultivated with no chemicals but with allowed chemical fertilizer.
Low Agricultural Chemicals	Produce cultivated with 1/2 or less the amount of chemicals allowed by law.

Source: adapted from Brehm and Morgan (2003) and Oh and Phillips (2005).

### 3. Country-of-origin labelling

In a case of food products, displaying country-of-origin (COO) on packaging label is a legal condition to be marketed in Korea (USDA, 2003). As pointed by Ahmed et al. (2004) and Schaefer (1997), COO has played a negative or a positive role in marketing merchandise and an impact on the product evaluation of customers. A watch labeled "Swiss made" is one of the most well-known examples. COO has been mentioned in several articles (e.g. Han and Terpstra, 1988; Bilkey and Nes, 1982) as "the country of manufacture or assembly" and identified by the label "made in" or "manufactured in" (e.g. Chasin and Jaffe, 1979; Bannister and Saunders, 1978; Nagashima, 1977). However, many types of products made with components sourced from many different countries have made it difficult to have the accurate its definition (Ahmed et al., 2004). Nevertheless, Ozsomer and Cavusgil (1991) defined COO as the country where a company's headquarters is located, as opposed to the Korean definition, which is "the country of production, processing or manufacturing" (Shin, 2004). The Korean definition comes under any of the categories as followings: first, "the country which has produced the goods wholly" and secondly, in cases of goods produced, processed, or manufactured in more than two countries, the countries or the country which has ultimately made substantial transformation in the products. Nevertheless, defining COO is a very complicated and difficult task in today's internationalised world (Al-Sulaiti and Baker, 1998).

With regard to the effects of country-of-origin on consumer attitudes towards food products, many authors have paid considerable attention (e.g. Ahmed et al., 2004; Schaefer, 1997; Chao and Rajendran, 1993; Hooley et al., 1988). COO directly affects consumers' perception of product attributes (e.g. quality) in regard to products the consumer is unfamiliar with, acting like a halo, while as for a

familiar product, consumers infer a country's image from its product information such as brand, price or COO which acts as a summary construct (Hooley et al., 1988). There is, however, an argument that COO, in nature, does not affect consumer attitudes directly, whereas it is obvious to have a direct influence on consumer beliefs about other product information (Choa and Rajendran, 1993). Furthermore, a couple of studies (Ahmed et al., 2004; Schaefer, 1997; Chao et al., 1993) have found that as consumers are presented with a greater number of cues, the magnitude of a single cue such as COO seems to be decreased in evaluating a product. Interestingly, Al-Sulaiti and Baker (1998) referred to a study of country of origin effects on different product categories –electronic products, food products, fashion items and household merchandise - that Canadian consumers preferred domestic food to food made in USA whereas USA made products in the other three categories were preferred to Canadian merchandise. As for imported products, however, Hooley et al. (1988) interestingly found that the higher the level of political development of a country, the more favourable image of the country and its products. What is evident is that consumers are more likely to rely on extrinsic cues easily accessible such as brand name and country of origin (Schaefer, 1997).

### 4. Research hypotheses and questions

A series of hypotheses relating to the research aim and objectives have been formulated, based upon the literature review. Unlike countries such as US, EU and Japan where have operated only one type of organic food label, there are four types in Korea. The researchers accordingly hypothesize that:

H1: Consumers are not well aware of organic food labels, due to complicated label systems for environmentally-friendly food which are regulated by separate government bodies.

Despite the fact that consumers are more involved in organic food than in its conventionally grown counterparts (Zanoli and Naspetti, 2002), staple food items are in the low-involvement category, where the influence of COO is expected to be low as a result of low financial risk and low hedonistic value (Ahmed et al., 2004). Consequently, the researchers propose the following hypothesis:

H2: COO is of less importance than other information, such as price and quality, when consumers buy organic food.

Ahmed et al. (2004) stated that consumers in developed countries prefer products from their own country primarily, rather than the products from other countries. In the same vein, it is expected that Korean consumers like foods produced as well as cultivated in Korea, where is an advanced country having joined the trillion dollar club of world economies in 2004 (Intute, 2008). The researchers accordingly hypothesize that:

H3: Korean consumers prefer domestically grown and produced organic foods to organic foods from overseas.

By the research by Lee (2005) in Korea, it is suggested that most Korean consumers do not consider Kimchi to be "made in Korea" food, if the cabbages are sourced from China, even though the dish has made in Korea. In other words, Korean people are likely to pay attention to where ingredients are from. Nevertheless, most raw organic ingredients such as soy beans, grain, wheat and oil were imported from overseas to make processed organic foods (Oh and Philips, 2003). As part of efforts to protect consumer rights and local farmers, the government legally forced manufacturers to display the COO of main ingredients on the back of a product's package, regardless of conventional or organic foods. This code, however, tends to lead to complication of COO checks, because checking COO is one of the inconvenient jobs for consumers buying organic products. Therefore, the researchers propose that:

H4: Korean organic consumers purchase a processed organic food made in Korea but with ingredients sourced from other countries, just knowing that it is Korean organic food, because of lack of COO check of ingredients.

### III. Research methodology

An effective research design is at the centre of research activity and forms the framework of the entire research process, shaping research methods to achieve research objectives, the research instruments, the sampling plan and the data types - e.g. quantitative or qualitative (Chisnall, 2005). Given that the research aims at describing the specific features or characteristics of Korean organic food purchasers, descriptive and investigative approaches give insights into consumers' awareness of organic food labels and country of origin. There are two types of data widely available: secondary data and primary data (Kent, 2007; Chisnall, 2005). Primary data is gathered via a questionnaire survey for quantitative research to gain generalisable results of Korean consumers' knowledge of and COO effects on organic food. The questionnaire survey has consisted of the understanding of the concept "organic" and organic food labels, country of origin effects on organic food and basic demographic factors. On the other hand, the researcher attempted to collect secondary data through official reports and statistics generated by Korean government bodies concerning organic food, and United States Department of Agriculture.

#### 1. Sample

According to USDA (2006), more than 80% of Korean consumers purchase organic foods and thus from the whole Korean population of 4.9 million people, it is estimated that approximately 3.92 million have bought organic foods. Amongst those, population is classed as all consumers buying organic food. However, due to obvious limitation, data collection is restricted to a clustering sample of 200 or-

ganic food purchasers in 2 big cities to test the proposed hypotheses. A cluster sampling is a random sampling in which interviewers approach potential respondents in limited geographical areas selected as sampling points. Although cluster and area sampling has the drawback of potential sampling error of a given sample size, it is beneficial in terms of time and cost (Chisnall, 2005). Moreover, for researchers seeking representative samples, if clusters contain a good balance of mixed population, the sample is more likely to be representative (Chisnall, 2005). Therefore, the researchers selected two areas - Jungnang-gu in Seoul where is the capital city in Korea and Jeju where is far from Seoul. By choosing the two cities, the regional deviation resulted from different consumption culture can be reduced. The sample is collected in both areas from large supermarkets, special organic food stores, and medium apartment complexes where various social levels of residents reside.

Data are gathered via a questionnaire to capture quantitative data in marketing but the questionnaire survey can obtain qualitative data by having questions of asking respondents' opinions or attitudes using open-ended ones or scales (Kent, 2007). In this research, the questionnaire consists of four sections to collect basic information of organic food purchases, perceptions of organic food labelling, country of origin effects on organic food and respondents' demographic profiles. As an analysis technique, Likert scaling is also used to explore customers' attitudes towards organic foods and product evaluation.

Before the actual survey, a pilot test was needed to improve the questionnaire quality (Malhotra and Birks, 1999). The questionnaire was initially written in English then, translated into Korean and pre-tested using a convenience sample of approximately ten Koreans residing in Scotland temporarily. The questionnaire was revised based on the pre-test responses. The number of open-ended questions was reduced, because of overlapping. The layout and the wording were also slightly adjusted to form easy-to-understand version, based on the respondents' feedback.

#### 2. Data analysis

In order to obtain accurate and reliable statistics from the data collected, data is coded and analysed using the Statistical Package of the Social Science (SPSS). Univariate data analysis is conducted first, to look at the distribution of each variable, followed by bivariate analysis to examine relationships between two variables by One-way analysis of variance (ANOVA), T-tests and bivariate crosstabulations. Samples in Jungnang-gu and Jeju City were approached at random by the research assistants and completed the questionnaire on the spot from June to August in 2008. Overall, a total of 203 questionnaires were returned; 161 usable questionnaires were included in the data analysis, screening out respondents who had never purchased organic foods and did not complete the questionnaire.

##### 2.1. Demographic profile

Respondents consist of 27.95% males and 72.05% females out of the final sample of 161. Age proportion of the respondents is rela-

tively well-distributed: 21 to 30 (27.95%), 31 to 40 (35.40%) and 41 to 50 (24.84%), backing up a finding of Korean females in their 30s and 40s being the main environmentally-friendly food purchasers for their family (ATCH, 2008). However, two age categories of "less than 20" and "over 60" have no respondent which can be attributed to the fact that that the category, "less than 20" largely consists of students and "over 60" is not the main grocery shopping group in Korea. In terms of marital status of the respondents, 62.73% are married, whereas 37.27% are single. Moreover, in the sub-sample of 101 married people who have bought organic food, married females account for 79.2%. Therefore, we can infer that main organic food purchasers are married females, supporting the finding that married female consumers are the primary shoppers and mainly responsible for grocery shopping in the Korean households (Lee, 1999). It is revealed that almost half of the respondents (46%) are salaried people working full-time in the private sector in various firms and regarding education level, each proportion of high school, college and university degree is close ranging from 28.57% to 29.81%. Finally, two income categories of "under £1,000" and "£1,001 to £1,500" represent 57.14% of the entire respondents, which is representative of national income statistics indicating that a household's average monthly income with more than two family members is approximately £1,500 in Korea and the average income for a household of a member is about £650 (KNSO, 2007).

## IV. Findings

### 1. Consumer buying patterns

The survey shows that Korean consumers purchase organic vegetables (48.8%) and fruits (31.1%) most frequently, followed by grains (10.7%), confectionary (5.7%) and beverages (3.7%). It is likely that Korean consumers focus on the purchase of fresh organic produce, rather than on processed organic products. Over half of organic purchases are made in supermarkets or department stores' food sections (57.3%). As for purchase frequency, "once a month" (32.9%) and "once every two months" (37.3%) are most commonly mentioned responses from the sample. Korean consumers buy organic foods for reasons of "healthier" (55.9%) and "safer" (28.6%), followed by "more nutritious" (13.0%), "tastier" (1.9%) and environmentally-friendly (0.6%).

In terms of understanding of organic food, the concept of "food considering the environment and health" was the most commonly selected with 42.9%, followed by "food with no chemical fertilizer and synthetic chemicals" with 38.5%. 13.7% perceived organic food as "food with less chemical fertilizers and synthetic chemicals". The concepts of "food with no genetically modified ingredients" and "food produced with traditional farming methods" were chosen least, accounting for 1.9% and 2.5% respectively.

Associated with the criteria considered essential for organic food, Table 4 shows that consumers understand, relatively well the criteria of organic food, although 18.01% mentioned natural fertilizers cannot

be used in organic production and 11.81% can use pesticides as opposed to the actual production standards, while just under half of the sample (49.7%) recognise organic products by their product name with the word "organic", followed by organic food certifications (22.4%).

<Table 4>Criteria of organic food

Items	Synthetic fertilizer	Artificial chemicals	Herbicides	Growth Hormone	Natural fertilizers	Pesticides	Artificial additives
Use	13	0	8	13	132	17	10
%	8.78%	0.00%	5.23%	8.78%	81.99%	11.81%	6.62%
Non-use	148	161	153	148	29	144	151
%	91.93%	100.00%	95.03%	91.93%	18.01%	89.44%	93.79%
Total	161	161	161	161	161	161	161

### 1.1. Organic food labels

Four types of food labels operated in Korea were presented to explore the extent of Korean consumers' understanding of the labels. More than half of the sample (57.1%) have seen or heard the food labels. A large percentage of the samples have become aware of the contents of the labels through TV/Radio (38.7%) and Newspapers/Magazines (23.7%). Nevertheless, Korean organic food purchasers were not well aware of the labels and did not recognise the differences among the certifications, showing that over 60% of the sample replied "do not recognise the difference at all" and "hardly recognise the difference", as seen in Table 5.

As a consequence, this data analysis results support H1, which Consumers are not well aware of organic food labels, due to complicated label systems differently regulated by a few government bodies.

### 2. COO Effects on Fresh Organic Produce

With regard to COO checking on "organic produce" and "organic processed products", there is not much difference, in terms of frequency, with 53.4% ("always check" plus "quite often check") and 50.3% ("always check" plus "quite often check") respectively. However, the percentage of COO checks on the ingredients is found to be much lower with 31.7% ("always check" plus "quite often check"). As seen in Table 6, "Quality/Taste" is considered as the most important aspect in evaluating an organic food, representing 61.49% ("important" plus "extremely important"), followed by "country of origin" (60.25%), whilst "package" is the least considered with 14.91% ("important" plus "extremely important"), and 42.24% ("not important at all" plus "not important").

In order to identify COO effects, we use three organic agricultural products: kiwi, tofu and flour, with different product informational cues (e.g. COO, brand and price, etc.). In terms of the preference of two kiwi types: one from Korea and the other from New Zealand, domestically produced kiwis (82%) were preferred by a majority of the percentage to the New Zealand fruit (18%). Four different types of tofu distributed in Korea were presented: (1)tofu: Australian organic bean 100% with a leading national brand, £1.12, (2) tofu: Chinese organic bean 100% with a leading national brand, £1.42, (3) tofu: Korean organic bean 100% with an unwell-known brand, £1.60, and

(4) tofu: Korean conventional bean 100% with an unwell-known brand, £1.05. Not surprisingly, a domestically produced tofu with soy-bean cultivated in Korea was chosen the most favourable one (69.57%), even though it is not one of the leading national brands, whereas the market leading brand with Chinese organic beans was the last to be selected (3.11%). Next, four different flour items were presented: (1) flour: Australian organic wheat 100% with a leading brand, £2.75, (2) flour: Kyrgyzstan organic wheat 100%, £2.47 with a leading brand, (3) flour: German organic wheat 100%, £2.45 with a leading brand in Germany, (4) flour: Korean organic wheat 100%, £1.75 with an unwell-known brand. Similar to the tofu case, Korean organic flour was ranked first with 124 out of 161 respondents. As a reason of selection of the item for No. 1, 120 respondents replied "I ranked it first since it is domestic". On the contrary, despite "Chungjungwon" being one of the leading national brands in Korea, Chungjungwon flour made of Kyrgyzstan wheat was ranked last, for a reason of unfamiliar COO.

<Table 5> Recognition of difference of labels ("1" – not at all -- "5" - fully)

	1	2	3	4	5	Total
Organic vs. Transitional	67	59	26	5	4	161
Percent (%)	41.61%	36.65%	16.15%	3.11%	2.48%	100.00%
Organic vs. No	45	52	39	17	8	161
Percent (%)	27.95%	32.30%	24.22%	10.56%	4.97%	100%
Organic vs. Low	46	60	30	19	6	161
Percent (%)	28.57%	37.27%	18.63%	11.80%	3.73%	100%
Transitional vs. No	66	64	20	9	2	161
Percent (%)	40.99%	39.75%	12.42%	5.59%	1.24%	100%
No vs. Low	48	53	29	23	8	161
Percent (%)	29.81%	32.92%	18.01%	14.29%	4.97%	100%

Accordingly, H3 - South Korean consumers prefer domestically grown and produced organic foods to organic foods from overseas – has been proved. However, given the situation where COO information on a processed product is not accessible as easily as brand and price but listed on the ingredient panel at the back, the statistics previously examined on COO check of ingredients in processed organic products indicate that the percentage of COO check is small with 31.7% out of 161 respondents. Furthermore, as for processed products with ingredients from other countries, in particular, from countries with unfavorable COO image, COO information access is not more obvious and straightforward to check. The reasons why respondents chose (2) tofu (with a Korean leading brand but made of Chinese organic beans) and (2) flour (with a Korean leading brand but made of Kyrgyzstan organic wheat) for the last place are "low trust of Chinese foods" (107 out of 111 respondents who have ranked the product for the bottom) and "unfamiliar COO of Kyrgyzstan (70 out of 74 respondents) respectively. Despite consumers' attitudes towards countries with a negative image, Pulmuwon, which produces (2) Tofu, is leading the packaged tofu market with a 75% market share (ALRIC, 2005).

<Table 6> Importance of multi-cues ("1" – not important at all -- "5" – extremely important)

	1	2	3	4	5	Total
Quality	6	9	47	47	52	161
%	3.73%	5.59%	29.19%	29.19%	32.30%	100.00%
Brand	11	25	75	37	13	161
%	6.83%	15.53%	46.58%	22.98%	8.07%	100%
Price	5	23	55	46	32	161
%	3.11%	14.29%	34.16%	28.57%	19.88%	100%
Package	33	35	69	21	3	161
%	20.50%	21.74%	42.86%	13.04%	1.86%	100%
COO	8	11	45	46	51	161
%	4.97%	6.83%	27.95%	28.57%	31.68%	100%

As a consequence, H2 - COO is of less importance than other information such as price and quality, when consumers buy organic food - is partially demonstrated, depending on the readiness of COO information. Furthermore, the research supports H4 - Korean organic consumers purchase a processed organic food made in Korea but with ingredients sourced from other countries, just knowing that it is Korean organic food because of lack of COO checks of ingredients.

### 3. Relationship between income level and purchase frequency

The researchers attempted to investigate whether income levels are closely related to purchase frequency. A 3 by 2 cross-tabulation is created to find out a relation between the two variables. Cramer's V is used to check the degree of the association since the technique is widely applicable in any type and size, and in nominal scales and combinations of ordinal and nominal variables (Kent,2007). The value Cramer's V can be achieved is between 0 and 1, indicating that the closer V is to 1, the larger the association between two variables (PlanetMath,2007). The data analysis explored whether there is a relationship between income level (Category 1: under £ 1,500; Category 2: £1,501 to £2,000 and Category 3: £2,001 - divided based on Korean national average monthly income of approximately £ 1,500) and purchase frequency (Category 1: more than once a week and Category 2: less than once a month). The achieved value of Cramer's V is .36, indicating that there is a small association between income level and purchase frequency, as seen in Table 7 and 8.

<Table 7> Income grouping 1/2 \* purchase frequency grouping Crosstabulation

	Count			Total
	Purchase frequency grouping			
	1	2		
Income grouping	1	15	77	92
1/2	2	3	17	20
	3	23	26	49
Total		41	120	161

<Table 8> Value of Cramer's V between income level and purchase frequency

Symmetric Measures			
	Value	Asymp. Std. Error <sup>a</sup>	Approx. Prob. <sup>b</sup>
Nominal by Phi	.326		.000
Nominal Cramer's V	.326		.000
N of Valid Cases	161		

<sup>a</sup>Not assuming the null hypothesis.  
<sup>b</sup>Using the asymptotic standard error assuming the null hypothesis.

4. Relationship between label recognition and level of label awareness

There is a significant difference in scores for people who have seen or heard the labels (M=11.67, SD=4.30) and people who have never seen or heard the labels [M=9.25, SD=3.98; t (159)=3.66, p=.00]. However, the magnitude of the difference in the means is relatively small (eta squared=.008), meaning that 8% of the variance in the awareness of the labels is explained by the labels' contact since scales of label awareness used in 5 label comparison statements in the questionnaire are relatively narrowly ranged from 1 (do not understand at all) to 5 (fully understand).

Independent-sample t-tests are used to explore how sex and marital status affect to acknowledge differences among environmentally-friendly food certifications. Regarding the relationship between gender and label awareness, there is no significant difference in scores for males (M=10.24, SD=4.45) and females [M=10.78, SD=4.29; t (159)=-.710, p=.48]. In addition, the magnitude of the difference in the means is very small (eta squared=.006), meaning that only .3% of the variance in the awareness of the labels is explained by sex. On the other hand, there is a statistically significant difference between marital and label awareness, in scores for "single" (M=9.72, SD=4.34) and "married" [M=11.18, SD=4.25; t (159) = -2.10, p=.038]. The magnitude of the difference in the means is .027(eta squared). In respect of age, we attempted "One-way between groups ANOVA"to explore the impact of age on the level of the awareness of the environmentally-friendly labels. Few respondents, however, fall into two particular categories of the ordinal variable (Category 1:"under 20" and Category 6:"over 60"), hence the researchers attempted to reduce the six categories to three (Category 1:"under 30" Category 2:"31 to 50" and Category 3:"over 51"). An ANOVA analysis has been concluded that there is no significant difference at the p>.05 level for the four age groups [F(2,158) = 2.27, p=.11]. Furthermore, the researchers attempted One-way analysis of variance (ANOVA) to explore the impact of the age groups of the respondents' children on their level of awareness of the environmentally-friendly labels since one is ordinal and the other variable is continuous. six age categories of children are intentionally reduced to three categories (Category 1: under 10; Category 2: 11 to 20 and Category 3: no child and over 21) for the logical reason that the presence of younger children in the household is positively associated to the purchase of organic food (Tsakiridou et al. 2008; Fotopoulos and Krystallis 2002). An ANOVA analysis has revealed the conclusion that there is no significant difference at the p>.05 level for the 3 age groups of the respondents' children [F (2,103) = 2.37, p=.09].

5. Relationship between demographic profile and COO check frequency

There is a small association between gender and COO check frequency of organic produce, processed organic foods and finally ingredients on the ingredient statement, as seen in Table 9 and 10, while the relationship between gender and COO check frequency of processed organic foods' ingredients on the ingredient listing is found. However, the relation between sex and COO check of organic produce and processed organic foods is not found (see Table 11 and 12).

<Table 9> Values of Cramer's V between gender and COO check frequency

Relation between sex and COO check frequency	Cramer's V
COO check frequency of organic produce	.08
COO check frequency of processed organic foods	.13
COO check frequency of ingredients on processed Organic foods' ingredient statement	.16

<Table 10> Male/female\*COO list grouping 1/2 Crosstabulation

Count	COOlist grouping		
	1	2	Total
male/female Male	9	36	45
Female	42	74	116
Total	51	110	161

<Table 11> Values of Cramer's V between marital status and COO check frequency

Relation between sex and COO check frequency	Cramer's V
COO check frequency of organic produce	.001
COO check frequency of processed organic foods	.08
COO check frequency of ingredients on processed Organic foods' ingredient statement	.16

<Table 12> Single/married\*COO list grouping 1/2 Crosstabulation

Count	COOlist grouping		
	1	2	Total
Married single	13	47	60
married	38	63	101
Total	51	110	161

V. Conclusions and implications

Korean consumers are likely to well understand the term, "organic food", in a more general term, rather than in a technical and practical term. Unlike integrated labelling system for organic food in the USA, EU and Japan, however, many sub-labels derived from the concept of organic foods make consumers confused when shopping organic foods, because Korean consumers are not well aware of a few organic food labels. This finding is consistent with H1 that consumers are not well aware of organic food labels. It could support Oh and



Philips's finding (2005) that Korean consumers are confused about the four types of organic food labels due to complicated label system for environmentally-friendly food which are regulated by separated government bodies

In respect of COO effects, the researchers conclude that Korean consumers prefer domestic organic food products to those from overseas, consistent with H3. Because of the lacks of COO check on ingredients, however, national brands with organic ingredients from developed countries are less likely to be damaged by negative COO image. As such, H2 that COO is of less importance than other information, such as price and quality, when buying organic food, was partially proved, depending on the level of accessibility of COO. Also, H4 that Korean organic consumers purchase a processed organic food made in Korea but with ingredients sourced from other countries, just knowing that it is Korean organic food because of lack of COO check of ingredients, is partially supported by research findings.

We found that the relationship between income level and organic food purchase frequency is relatively small (Fotopoulos and Krystallis, 2002), whilst more women (61.2% - 71 out of 116 female respondents) have seen or heard of the four different certifications than men (46.7% - 21 out of 45 men). On the other hand, one of the interesting findings is that married people appreciate four types of organic-related labels better than single people, regardless of sex. The rest of factors, such as age, and the presence of children, do not have an impact on the consumer understanding about the food labels.

The findings of this study show that consumers do not comprehend the organic food certifications, due to different labelling systems for organic produce and processed organic food. The research, thus, suggests that government bodies need to reestablish labelling systems, considering consumers' attitudes towards current organic food labels, and further, supports Lee (2005), who noted that acts related to environmentally-friendly agriculture certification should be unified in order to improve efficiency of management systems and develop user-friendly labels. Similarly, public advertising should be followed to raise public awareness of the labelling to enable customers to have the correct information.

This research, also, helps international as well as domestic marketers to understand COO effects and the influence COO of ingredients on the image of an organic product.

As research limitations, this research took place in a limited period in the infancy of the organic food market when consumers did not have a wide knowledge and experience of organic food. Therefore, findings would be different in the future mature market. Also, only three product categories, kiwi (organic produce), tofu and flour (processed organic food) were used to represent the food industry, limiting the generalisability of the findings of this study to other organic products. Furthermore, there were no respondents in age groups of 20 to 60, that is, "under 20" and "over 60". Thirdly, this research has been limited in the country of South Korea. Research on the same subject examined in more industrialised countries or underdeveloped countries would generate different results, thus future cross-cultural comparison research could help to explore differences amongst countries.

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