# Perceived Risk and Willingness-to-Pay for Different Organic Certification Levels in Thailand

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**Abstract**

There is an increasing demand for organic food, as consumers are becoming more health-conscious and concerned with food safety. This paper investigates how a firm's size (small group of independent farmers versus large registered corporation) and certification levels (not certified, nationally certified, or internationally certified) affect Thai consumers' perceived risk and willingness to pay for these products. The data were collected from 196 Thai organic shoppers using a combination of interviews, questionnaires, and field experiments. The results show that both size and certification affect consumers' perceived risk. In particular, respondents perceive higher risks of chemical contaminants in organic products produced by large firms. They also perceive higher risks in products that are not organically certified. However, the size and certification factors do not affect people's willingness to pay. The study also found that consumers trust a small group of independent farmers rather than large corporate producers when products are claimed to be organic but are not certified. The results provide insights and recommendations for organic food producers concerning production and certification strategies.

**Keywords:** organic certification; perceived risk; willingness-to-pay

## Introduction

The organic food market has been rapidly expanding worldwide, with an average sales growth of 10 to 20 per cent yearly (Zepeda & Li, 2007). In Asia, this industry has also been developing in recent years. However, people in this region do not understand organic agriculture (Yussefi, 2008). Southeast Asia has the second-largest organic food market on this continent, with an average annual growth rate of 20 per cent (Eischen, Prasertsri, & Sirikeratikul, 2006). In Thailand, local non-governmental organizations started organic farming in the early 1980s due to the overuse of chemical substances in the agricultural industry. There is currently an estimated 256 square kilometres of land that is organically farmed in Thailand, but this accounts for only 0.12 per cent of the total land available. In addition, the United States Department of Agriculture estimated the market value of organic food in Thailand to be about $20 million in 2006 (Eischen, Prasertsri, & Sirikeratikul, 2006).

Many researchers have studied issues that affect consumers' purchasing intentions of organic produce. They have found that demographics, socioeconomics, education, knowledge, health and environmental concerns, brands, and shop locations play an important role in shaping consumers' decision-making about organic food (Li, Zepeda, & Gould, 2007; Roitner-Schobesberger, Darnhofer, Somsook, & Vogl, 2008; Haghiri, Hobbs, & McNamara, 2009; Sangkumchaliang & Huang, 2012; Zagata, 2012; Dumea, 2013; Shamsollahi et al. 2013). In addition, empirical studies have specifically investigated factors that influence consumers' willingness to pay for organic food. These include characteristics such as demographics, socioeconomics, education, knowledge, perception of food quality, health and environmental concerns, and store location (Jolly, 1991; Govindasamy & Italia, 1999; Boccaletti & Nardella, 2000; Gil, Gracia, & Sanchez, 2000; Posri, Shankar, & Chadbunchachai, 2006; Akgungor, Miran, & Abay, 2007; Griffith & Nesheim, 2007; Ureña, Bernabéu, & Olmeda, 2007; Rousseau & Vranken, 2011; Voon, Naguib, & Agrawal, 2011; Hamzaoui-Essoussi & Zahaf 2012; Kai, Chen, Chuan, Seong, & Kevin, 2013; Kaya, Florkowski, Yen, & Suh, 2013; Owusu & Anifori, 2013).

Consumers sometimes make a decision based on the characteristics of producers. In particular, there are two prominent characteristics of organic food producers in the Thai market. First, producers are either small or large. Small producers are groups of independent farmers, while large producers are registered corporations. Second, there are many different organic certifications in the market. Most of the organic food producers in Thailand are either not certified, certified at the national level (such as via Organic Thailand), or certified at the international level (such as IFOAM or USDA).

Hence, this study explores the effect of these two factors on Thai consumers' perceived risk and willingness to pay for organic food. In addition, it also hopes to provide valuable insights and recommendations to the organic food industry firms regarding their production and certification strategies. In particular, organic food producers will be able to aptly communicate their certification levels and price their products to be most attractive to the consumers.

## Literature Review

### Organic Food Purchasing Decisions

According to existing literature, many factors influence consumers' purchasing decisions for organic food. Health concerns and environmental issues are key drivers of these decisions (Lockie, Lyons, Lawrence, & Mummery, 2002; Chryssohoidis & Krystallis, 2005; Li, Zepeda, & Gould, 2007; Gracia & Magistris, 2008; Roitner-Schobesberger et al., 2008; Hjelmar, 2011; Dumea, 2013; Shamsollahi et al. 2013). Brand awareness and brand labels also significantly affect purchasing intentions (Li, Zepeda, & Gould, 2007). Trust is another critical factor for consumers (Sporleder, Kayser, Friedrich, & Theuvsen, 2014). In particular, Harper and Makatouni (2002) reported that organic food shoppers in the UK have become very curious about these products' certification bodies, processes, and requirements. Similarly, people in Sweden also desired officially certified organic food products that provided trustworthy information (Magnusson, Arvola, Åberg, & Sjödén, 2001).

**Judgment and Decision-making concerning Organic Food**

The judgment and decision-making literature has shown that people do not always behave rationally when making risky decisions (Kahneman & Tversky, 1979). This is relevant to organic food purchasing decisions as people cannot always be sure that the products that they are buying are genuinely organic. Hence, there is inherently some risk when consumers are purchasing organic products, and these decisions can depend on the frame of the situation. For example, Gifford and Bernard (2004) found that customers are more likely to purchase organic products that are advertised with positive words (e.g., healthy and safe) than those that are advertised with negative words (e.g., pesticide-free and harmless). Positive frames also have more substantial effects on consumers than negative ones. In particular, Grewal, Gotlieb, and Marmorstein (1994) claimed that people tend to be risk-averse toward positively framed choices because they make decisions in the gain domain.

**Perceived Risk of Organic Food**

Consumers' perception of the risk and benefits of organic food products is a significant determinant of consumption. Perceived risk in this context refers to the expectation of losses from any organic food purchases (Peter & Ryan, 1976). Some consumers are risk-averse toward unhygienic food and are willing to pay a premium to reduce the risk. At the same time, they are still not sure whether they consume indeed organically produced food. This represents ambiguity between benefits and risks that arise in the consumers' minds (Bourn & Prescott, 2002).

Additionally, Bäckström, Pirttilä-Backman, and Tuorila (2006) found that people will be concerned about the associated risk with their food. Typically, people choose the alternative that maximizes their utilities or minimizes their risks. However, due to imperfect information, consumers cannot always calculate the probability of an expected outcome and choose the optimal option. Therefore, their decisions are often subjective (Woodside, 1974).

**Willingness-to-Pay for Organic Food**

Demographic variables including gender, family background, education, disposable income, and food safety concerns influence the willingness to pay for organic products. However, Lagerkvist, Hess, Ngigi, and Okello (2011) observed that trust and perceived risk are the most influential factors that determine consumers' willingness to pay. Other factors that affect people's willingness to pay are the degree of trust consumers have toward organic labels, personal experience with the product, and the price of the product itself rather than food safety and nutrition concerns (Angulo, Gil, & Tamburo, 2005).

**Table 1.** Comparison of Organic Certifications Logos in Thailand

| | International Standard | National Standard | Non-Certified |
|---|---|---|---|
| Standard Regulation | It depends on each country's rules and regulations regarding organic farming | regulated by the Thailand Ministry of Agriculture and Cooperatives. | |
| Range of Organic Stage | Stop using any chemicals 3-4 years before harvest | Stop using any chemicals 3-4 years before harvest | |
| Certified Institution | International private institution | Thailand Ministry of Agriculture and Cooperatives | |
| Period of Certification | One year and annually renew with inspection | One year and annually renew with inspection | |
| Certification Expense | High as it is an international standard and guaranteed by international inspector | Relatively low as the inspection was done under government authority | |
| Zone of Acceptance | Sellable worldwide with international standard | Applicable in both Thailand and some neighbouring countries that do not require international standard | Only applicable in Thailand |

Note. Adapted from Go Organic Community, p.16-17, by Lemon Farm, 2014, Bangkok: Free Press

## Method

### Participants

The study randomly selected one hundred and ninety-six shoppers from three locations of Thailand's most well-known organic grocery chains. Sixty of the participants were male, and one hundred and thirty-six were female.

### Design

The experiment is based on a *2X3* between-subject design, which elicited two dependent measures from each participant: perceived risk and willingness to pay concerning a bundle of food produced under the randomly assigned condition. The first factor is Firm Size

(*Small group of independent farmers vs Large registered corporations*), and the second factor is Certification Level (*Not certified, Nationally certified, Internationally certified*). Thus, each participant only saw one of the following conditions: Small-Not, Small-National, Small-International, Large-Not, Large-National, or Large-International.

**Materials**

The study has four distinct parts. In the first part, the study collected information regarding the general characteristics of Thai organic shoppers, asked of:

> What percentage of their typical food consumption is organic; what organic food items they frequently purchased; how much they know about organic food certifications; and what factors they consider when purchasing organic food.

The second and third sections are randomly ordered. The second part of the survey elicited each respondent's perceived risk under randomly assigned condition compared to non-organic products. In particular, the study asked the participant the following question:

> Suppose the likelihood of a non-organic food bundle being absolutely chemical-free is zero. What is the likelihood that an identical bundle produced by this type of firm (e.g., Small-National) would be chemical-free?

The third part of the study elicited participants' willingness to pay for the same bundle of food produced as in part two. In particular, the study asked the participant the following question:

> If a non-organic food bundle is priced at 100 Baht, how much would you be willing to pay for an identical bundle produced by this type of firm (e.g., Small-National)?

The last section is a field experiment that involves real choices. The study randomly selected 90 of the 196 respondents and offered them a choice between two rice packets, which different organizations produced. One producer is a small group of independent farmers, while the other is a large registered corporation. Both producers claim that their products are organic, but neither one has the certification.

**Procedure**

The study randomly approached each potential participant after they had finished shopping in the organic food grocery, on one-on-one basis with each respondent, with each session lasting ten minutes on average.

**Result and Analysis**

**General Characteristics of Thai Organic Shoppers**

Participants reported that 51% of their food is organic, SD = 25%. The most commonly purchased organic products are vegetables (91%), fruits (66%), and rice (56%). The majority of the respondents (55%) also felt insufficient knowledge. However, they reported that certification was the most common factor (69%) considered in purchasing decisions.

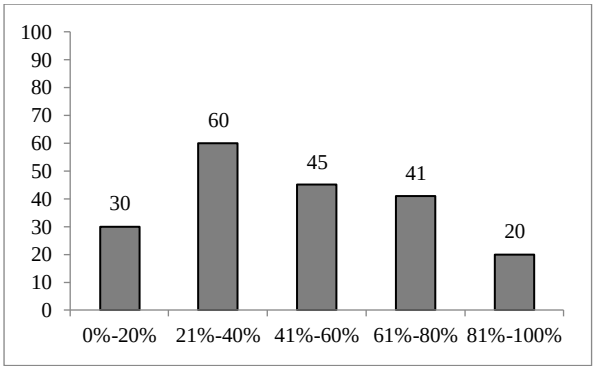


**Figure 1. Ratio of Food Consumed that is Organic**

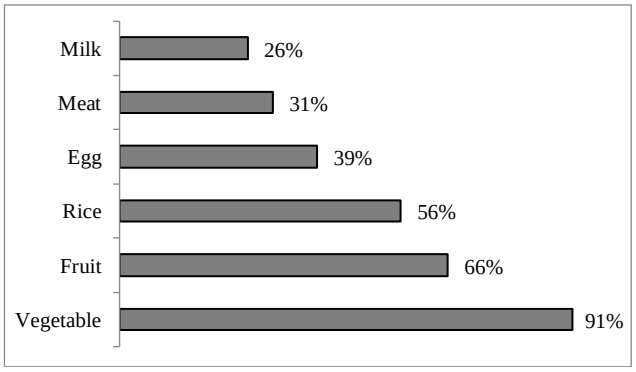


**Figure 2. Commonly Purchased Organic Food Item**

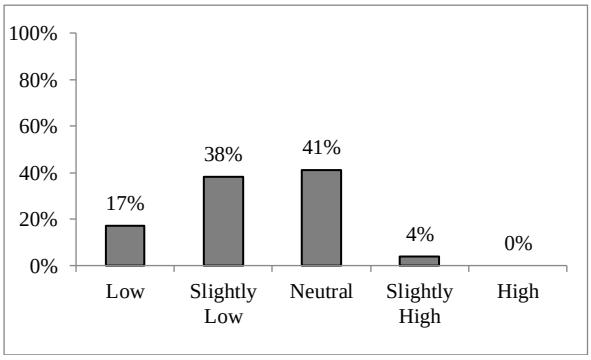


**Figure 3. Levels of Organic Certification Knowledge**

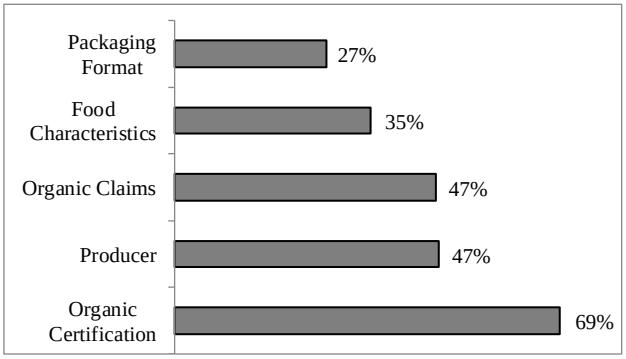


**Figure 4. Factors Considered in Purchasing Decision**

**Perceived Risk of Organic Produce**

The study conducted a two-way full-factorial ANOVA on participants' perceived risk data. Results reveal a significant main effect of Firm Size, $F(1,189) = 20.25$, $p < .001$, indicating that the respondents perceived less risk in organic food produced by small producers than large ones.

The main effect of Certification Level is also significant, $F(2,189) = 6.98$, $p = .001$, implying that different certification levels affect perceived risk.

However, the two-way interaction between Firm Size and Certification Level is not significant, $F(2,189) = 2.03$, $p = .13$, suggesting that the difference in consumers' perceived risk due to Firm Size was relatively equal at all three certification levels. Similarly, the difference in consumers' perceived risk due to Certification Level was relatively equal regardless of the Firm Size.

Performing multiple comparisons to scrutinize the effect of Certification Level, the study found significant differences between Not Certified and Nationally Certified and between Not Certified and Internationally Certified, but not between Nationally Certified and Internationally Certified. These results are most evident for the case of small independent farmers where perceived risk for Non-Certified, Nationally Certified, and Internationally Certified:

M = 0.63, 95% CI [0.55, 0.71]; M = 0.83, 95% CI [0.75, 0.90]; M = 0.82, 95% CI [0.74, 0.89] respectively.

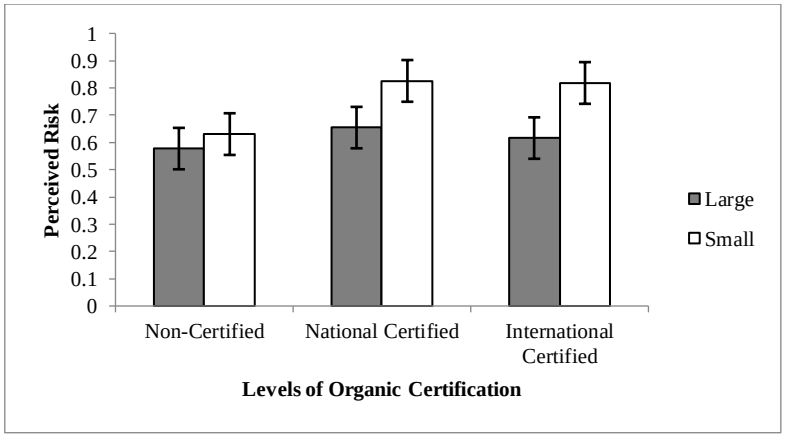


**Figure 5. Perceived Risk of Each Firm Size and Certification Level**

**Willingness to pay for Organic Produce**

The study also conducted a two-way full-factorial ANOVA on the participants' willingness-to-pay data. Neither of the two main effects of Firm Size, $F(1,190) = 0.07$, $p = .79$, and Certification Level are significant, $F(2,190) = 1.67$, $p = .19$, implying that respondents did not value the food bundles differently based on the producers' characteristics. In addition, the two-way interaction between Firm Size and Certification Level is not significant, $F(2,190) = 1.48$, $p = .23$.

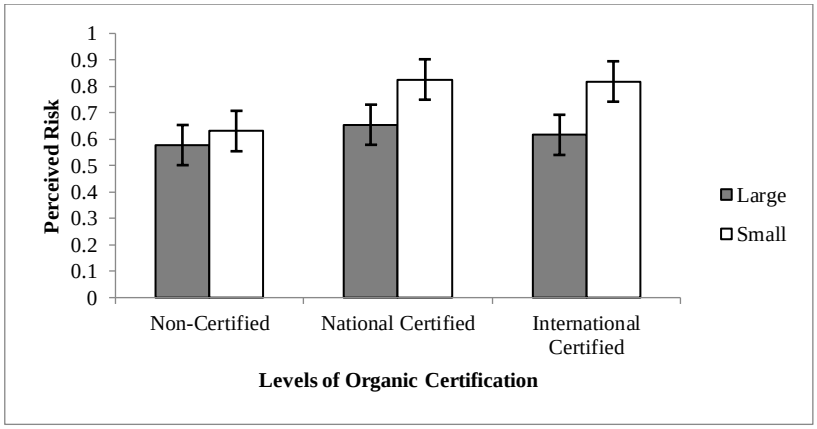


**Figure 6. Willingness-to-pay for Each Firm Size and Certification Level**

**Preferred Choices between Non-Certified Small versus Non-Certified Large Producers**

Out of the 90 participants that the study had randomly selected to participate in the last part of the study, 73% chose the rice packet that a small group of independent farmers produced. Only 22% picked the one produced by a sizeable registered company, while the rest were indifferent to the two packets.

**Discussion and Conclusion**

The study found a significant main effect of Firm Size on consumers' perceived risk. Most organic shoppers trusted a small group of independent farmers than a sizeable corporate producer. From the interviews during the study, participants believed that the former would be able to produce safer organic food than the latter. This is because the whole process is more likely to be on a smaller scale, which would be more easily controllable. Organic Certification Levels also had a significant impact on consumers' perceived risk. Participants felt that the food bundle that nationally certified organizations produce is the least risky. This is most likely because Organic Thailand is a widely recognized logo. Although there is not much difference in the perceived risk of national versus international certification for organic products made by a small producer, both levels of certification are superior to no certification. There is no discernible difference between no certification, national certification, and international certification for the large producer. Therefore, it may benefit small independent farmers to gain organic certification, but not for large corporate producers.

Comparing results from the three parts of the study yielded some interesting observations.

First, organic consumers were not willing to pay a premium for their choice to be safer. In the case of non-certified organic produce, they trusted a small producer more than a large corporate one. However, people were willing to pay a higher price to the large corporation than the small producer. This may be because participants imagined that large corporate producers would carry higher investments and other expenses. Thus, they were willing to accept higher prices for products from these sellers. In this situation, the willingness to pay may have captured people's perceived market prices rather than their valuations. The study concludes that less perceived risk may not translate into a higher willingness to pay for organic food products.

Second, in the last part of the experiment, most participants selected the rice packet that a small producer produced over one made by a large corporation. This makes sense as respondents trusted more in the small group of independent farmers. However, they also picked the choice they perceived to be lower in value. Thus, the study can infer that people might not have made decisions based on value assessments but instead on trust and positive feelings.

This paper contains at least a few limitations.

First, the results may not apply to all organic food shoppers directly, as the study only involves people in the Bangkok area.

Second, the study elicited perceived risk and willingness to pay concerning a food bundle. These quantities may have been complex for participants to evaluate holistically as each food item may have different amounts of markup. Furthermore, there are incentive-compatible tools such as proper scoring rule and BDM mechanism, which could have improved the assessments of respondents' perceived risk and willingness-to-pay

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