วารสารแก่นเกษตร
THAIJO
Content List Available at ThaiJo
Khon Kaen Agriculture Journal
Journal Home Page : https://li01.tci-thaijo.org/index.php/agkasetkaj



Consumers' intentions to purchase organic agricultural products in Khon Kaen, Thailand

Parichard Sangkumchaliang[1]* Piasak Pakdee[1]

[1] *Department of Agricultural Economics, Faculty of Agriculture, Khon Kaen University*

ABSTRACT: The adoption of organic agricultural products is highly determined by the market demand in Thailand. The market mainstream of organic agricultural products is found in the supermarket and fresh markets. The aim of this paper was to investigate the factors, which affect the consumers' intentions to purchase agricultural products. The data was collected from 400 consumers and was conducted in supermarkets and fresh markets where organic produce or safe food produce is available in Khon Kaen Province in Northeastern Thailand. The Chi-square test and the Structural Equation Modeling approach have been used to analyze the factors affecting the intention to purchase organic agricultural products.The results indicated that gender, level of education and level of income had all affected consumer behaviors. The main motives to purchase organic agricultural products were found to be health and environmental consciousness. Moreover, the results indicated that positive attitudes toward organic agriculture had increased the consumers' intention to purchase. Subjective norms and perceived behavior control had affected the consumers' intentions to purchase organic agricultural products. The findings provided evidence regarding the consumers' underlying motivations and intentions to purchase organic agricultural products with the goal of evaluating the future marketing implementation of organic production for Khon Kaen farmers.

Keywords: consumer behaviors; organic agricultural products; consumer attitudes; intention to purchase; Theory of Planned Behavior

Introduction

Over the past several decades, the success of economic development in Thailand has ensured that the country continues to play an important role in food production among its neighbors. However, Thai farmers have often suffered economic losses due to infestations and damage caused by pests. To minimize these losses, effective control measures must be applied. Using synthetic pesticides is the conventional and most popular control method for farmers because these products act quickly and result in high pest mortality (Ratanasatien et al., 2005). However, these pesticides are toxic to humans and to the environment, and harmful health effects arise from formulating and applying the pesticides and insecticides, which leave residues on food products (Thapinta and Hudak, 1998). Since the farmers and the consumers have become more concerned about their health and the environment, the land area for organic agriculture

* Corresponding Author: parisan@kku.ac.th

Received: date; June 6, 2020 Accepted: date; March 19, 2021 Published: date; June 15, 2021

increased from 1,005 hectares in 1998 to 34,109 hectares in 2013. The growth of organic production may have increased due to consumer concerns about health risks and environmental impacts of pesticide residues on conventional agricultural production methods, as well as due to a growing confidence in organic foods. The Northeastern region of Thailand, which is the largest area of the country and comprises one third of Thailand, has the highest population density (approximately 21 million people). Farmers in this region have started to grow organic rice and some organic vegetables (Pornpratansombat et al., 2011). The growth of organic production may be traced to an increase in consumer confidence about organic consumption. Even though consumers can now find organic agricultural products in the markets, the numbers of them are still very limited. Previous studies have investigated the production of organic rice and vegetables in the Northeastern Thailand, such as systems for growing organic rice, determining financial performance, and assessing the farmers' knowledge of the organic cultivation of organic vegetables (Chouichom and Yamao, 2010; Rattanasuteerakul and Thapa, 2012; Mondal et al., 2014). However, consumer-based studies are very limited, especially those studies that focus on organic consumers. This study intended to understand the rationale behind the consumers' decisions to purchase organic agricultural products. The aims of this study were to investigate the factors, which had affected the consumers' intentions to purchase organic agricultural products, and to analyze the consumers' preferences regarding organic agricultural products at the point of purchase. For this study, the model for determining the consumers' intention to purchase organic agricultural products was developed from the model of the Theory of Planned Behavior, which assists in analyzing the motives and behaviors of consumers.

Methodology

Research Framework and Hypothesis Specification

Since the growth of the market for organic products began in many counties around the world, empirical studies have been conducted on the consumption of organic products, especially in USA and Europe, as well as in Asia (Radmand, 2005; Zepeda et al., 2006; Chen, 2007; Gracia, 2008; Magistris and Gracia, 2008; Wier et al., 2008; Ahmad and Juhdi, 2010; Voon et al., 2011; Sangkumchaliang and Huang, 2012; Zanoli et al., 2012; Bravo et al., 2013; Panyakul, 2015; Kouy et al., 2016; and Sangkumchaliang and Pakdee, 2016). Many factors, which can potentially influence the consumption of organic agricultural products, have been identified in the relevant literature, including concerns for health safety and for environmental protection (Roitner-Schobesberger et al., 2008; Magistris and Gracia, 2008; Tsakiridou et al., 2008; Ahmad and Juhdi, 2010; Sangkumchaliang and Huang, 2012; Gan et al., 2016; and Ueasangkomsate and Santiteerakul, 2016). In previous studies, the importance of socio-demographic profiles has seemed to affect consumer attitudes and their consumption of organic products. The attributes of organic product are influenced by age, gender, income, and level of education (Roitner-Schobesberger et al., 2008; Sangkumchaliang and Huang, 2012; and Kouy et al., 2016). In particular, the buyers of organic produce tend to be older than the non-buyers of organic produce (Roitner-Schobesberger et al., 2008). Women have shown greater interest in and have displayed more positive attitudes toward organic products than men (Lea and Worsley, 2005). Both education and income have been reported to be significant factors that can affect consumers' purchases of organic products. It has been found that consumers with higher

educational levels and with higher incomes are more likely to purchase organic products ((Roitner-Schobesberger et al., 2008; Sangkumchaliang and Huang, 2012). The major obstacles to purchasing organic products are their price and their accessibility (Aygen, 2012; Kouy et al., 2016). These empirical studies focused on perceptions and attitudes toward organic products with the aim of providing information about which factors are involved in the consumers' decision-making processes when seeking to purchase organic products.

Accordingly, The Theory of Planned Behavior (TPB) is an interesting method that can be applied when making an analysis of the consumers' intention to purchase, which can predict consumer behaviors. This framework is commonly employed in order to better understand human behavior. The TPB model has been used as a construct to predict consumer intentions to purchase among consumers in Northeastern Thailand. Intentions are supposed to capture the motivational factors that can influence people's behaviors. Intentions indicate how willing people are to try something and the effort that they plan to exert for something in order to carry out their behaviors (Ajzen, 1991). The TPB has three concepts, which determine the intention. These are attitude, subjective norm, and perceived behavioral control. According to the research framework mentioned above, the TPB model is suitable for the purpose of examining the intentions of consumers to purchase organic agricultural products.

Attitudes

Attitudes toward organic agricultural products refer to the degree to which a consumer has developed a positive or a negative evaluation. Attitudes toward organic agricultural products are important factors that can explain the consumers' decision-making processes. The more positive attitudes a consumer has toward a product, the stronger his or her intention to purchase is (Ajzen, 1991). Previous studies, conducted on the relationship of attitude and intention to purchase organic products consistently, showed positive relationships, such as health and environmental consciousness, product safety, and product quality, which are conceptualized in terms of beliefs about organic agricultural products (Roitner-Schobesberger et al., 2008; Magistris and Gracia, 2008; Tsakiridou et al., 2008; Ahmad and Juhdi, 2010; and Sangkumchaliang and Huang, 2012). Moreover, a study, which was carried out in Europe, reported that consumers, who have more positive attitudes toward organic products, were more likely to pay higher prices for organic products (Redman, 2005). Attitudes toward organic agricultural products do affect consumers' intentions to purchase organic agricultural products. The items were collected using a Five-point Likert scale with three latent variables, which were reliable with the constructs. There were three significant latent factors as follows: 1) the consumption of organic agricultural products helps to protect the environment by not using chemicals and pesticides, 2) organic agricultural products are safer to eat than conventional agricultural products, and 3) they are of a higher quality than the conventional agricultural products. Based on the discussion above, the first hypothesis was proposed as follows:

H1: When consumer attitudes toward organic agricultural products are positive, the intention to purchase organic agricultural products are more likely to be positive.

Subjective norms

Subjective norms are concerned with the perceived social pressures that become behaviors (Ajzen, 1991), which refers to people having the perceptions of social pressure and social influence that can affect their behaviors. Social

pressure that affects a person's behavior and causes him or her to engage or not to engage in something is a subjective norm. Those people, who are close to the consumers, such as family members, friends, and significant others, influence their decisions (Tarkiainen and Sundqvist, 2005). Organic products are produced in a different way from products that are derived from conventional farming and as a result, are perceived to be healthier and more environmentally-friendly than conventional agricultural products. Therefore, the hypothesis proposes that the people, who surround the target consumers, such as their close friends and loved ones, are important in helping to influence their positive or negative attitudes toward organic products. In a study by Voon et al. (2011), it was found to have a significantly positive effect on the consumers' willingness to pay. Based on the above discussion, the second hypothesizes was proposed as follows:
H2: Subjective norms will significantly influence the intention to purchase organic agricultural products.

Perceived behavioral control

Perceived behavioral control refers to the perceived ease or difficulty in performing a behavior. Moreover, if they believe that they can behave in certain situations and they can take control, then they will perform (Ajzen, 1991). Moreover, perceived behavioral control is related to consumer behaviors (Chen, 2007). Therefore, consumers, who are perceived as having a higher rate of personal control, would have a stronger intention to purchase a product. Based on the discussion above, the third hypothesis is proposed as follows:
H3: A greater degree of perceived behavioral control will significantly increase the intention to purchase organic agricultural products.

Sampling and data analysis

The data was collected from March to June of 2015 by conducting a questionnaire survey in Khon Kaen Province, which is located in Northeastern Thailand. Supermarkets and fresh markets, which carried organic or safe food products, were selected as the sites for consumer interviews. Interviewers were trained to personally administer the questionnaire to consumers. Purposive sampling was used, which was employed in choosing the supermarkets and fresh markets in which to conduct the surveys, and in order to collect the data, Convenience sampling was used for the face-to-face surveys. The final sample consisted of 400 consumers. The questionnaire was designed to analyze the intention to purchase agricultural product, which was a construct of the consumer's attitudes toward organic agricultural products, subjective norms, and perceived behavior control. The items utilized a Five-point Likert-scale response, ranging from "Strongly agree (5)" to "Strongly disagree (1)" to accompany the statements. Moreover, several questions regarding the reasons why consumers would buy or would not buy organic agricultural products were included. Information, consisting of the socio-demographic characteristics of the respondents (i.e., gender, age, personal income, marital status), was also included. The methods used for analysis were Descriptive Statistical analysis, which can easily summarize and visually describe the sample results, and Structural Equation Modeling (SEM), which was employed to analyze the data. The data was analyzed using SPSS and AMOS software.

Definition of Variables

The TPB was used in the proposed model. The four constructs consisted of attitudes toward organic agricultural products, subjective norms, Perceived Behavioral Control, and the intention to purchase organic products. The model

can measure human actions and can predict the occurrences of certain behaviors. Every construct was measured by more than two latent variables. The statements were reported by using a Five-point Likert-scale, with a range from 1 (Strongly disagree) to 5 (Strongly agree). Firstly, the attitudes toward organic agricultural products were measured by three observed variables. Secondly, two observed variables were measured using the construct of subjective norms. Thirdly, two observed variables measured the construct of Perceived Behavioral Control (PBC). Finally, the intention to purchase organic agricultural products was measured by two observed variables (**Table 1**).

Table 1 The Measurement of latent variables

Constructs	Codes	Indicators
Attitudes toward organic agricultural products	AENVIRON	Organic agricultural product consumption helps to protect the environment by not using chemicals and pesticides.
	ASAFE	Organic agricultural products are safer to eat than conventional agricultural products.
	AQUALITY	Organic agricultural products are higher in quality than conventional agricultural products.
Subjective norms	SCFCS	My close friends and family members like to consume organic agricultural products.
	SEXCS	The ones you love expect you to buy organic agricultural products for them.
Perceived Behavioral Control	PBNDY	Whether I choose to buy organic agricultural products or not, depends upon me.
	PBMDY	If I were to choose to buy one or more organic agricultural products, it would depend upon me.
Intention to purchase agricultural products	ISAFE	I would buy organic agricultural products if they were determined to be safer to eat than the conventional ones.
	ITRUST	I would buy organic agricultural products if I could trust that they were truly organic products.

Results and Discussion

Respondent's Characteristics

The results of the demographic characteristics showed that about 57.50% of the respondents had been female, and in accordance with Thai culture, women are more likely to go to the market to do shopping than males. The average age of respondents was 36 years old, and the ages ranged from 18 to 76 years old. University graduates comprised 55.30% of the respondents. Of them, 50% held a Bachelor's degree, while 5.30% held a Master's degree or above.

Those, who had completed high school, numbered 29.30%, while 11% had finished primary school. The number of respondents with monthly personal incomes of less than 15,000 Baht totaled 44%, those with an income range of 15,001 - 30,000 Baht accounted for 44.50%, and those with a monthly income greater than 30,000 Baht totaled 11.60%. In Thailand, the minimum daily wage is equal to 300 Baht (approximately 10 US dollars per day).

Buying Behavior and Frequency of Purchasing Organic Agricultural Product

In **Table 2**, the results show that consumers were divided into two groups: the organic buyers (70.50%) and the non-organic buyers (29.50%). In the organic buyer group, the average age was approximately 39 years old, which was higher than the non-organic buyers with an average age of about 33 years old. Although the age of the organic buyers tended to be older than the non-organic buyers in Khon Kaen, they were found to be younger than the consumers in Bangkok with the average age of organic buyers being about 42 years old (Roitner-Schobesberger et al., 2008). However, they were determined to be older than the organic buyers in Chiang Mai, who had an average age of about 36 years old. Regarding gender, it appeared that females were likely to buy organic agricultural products when compared to males (χ^2=6.907, p=0.006). This profile shares similar results from studies in Bangkok (Roitner-Schobesberger et al., 2008). However, Chiang Mai Province did not show significant differences with respect to gender (Sangkumchaliang and Wenchi, 2012). Regarding educational level and income, the results indicated that organic buyers were more likely to have higher levels of education when compared to non-organic buyers (χ^2=32.439, p≤0.0001), which means that a consumer's level of education does affect consumer behaviors in relation to purchasing organic products. In reference to personal income, 73% of organic buyers received a monthly personal income of over 50,000 Thai Baht, while only 26.70% of members of the group of non-organic buyer shared the same income bracket (χ^2=25.394, p≤0.0001). The testing statistics showed a significant difference between the two groups of consumers. Regarding the purchasing frequency of the group of organic buyers, about 11% of respondents purchased organic agricultural products at least once a week, about 23% purchased once a month or less, and 23.40% purchase every two weeks. However, more than 40% of respondents very rarely purchased organic products (approximately less than two months).

Table 2 The respondents' demographic characteristics and the groups of buyers (n=400)

Variables	Number of interviewees (n=400)	Organic Non-buyers (n=118)	Organic buyers (n=282)	Sig.
Age average	35.73	32.91	36.91	
Gender				
Female	230	24.30	75.70	*
Male	170	36.50	63.50	
Highest educational level				*
Elementary	44	52.30	47.70	
Secondary	18	27.80	72.20	
High school	117	41.00	59.00	
Bachelor's Degree	200	20.50	79.50	
Master's Degree or above	21	4.80	95.20	
Personal income per month (Baht)[1]				
<15,000	176	42.00	58.00	*
15,000-20,000	110	21.80	78.20	
20,001-30,000	68	17.60	82.40	
30,001-40,000	19	15.80	84.20	
40,001-50,000	12	8.30	91.70	
>50,000	15	26.78	73.30	
Marital Status				
Single	200	31.50	68.50	
Married	117	31.60	68.40	
Married with kid(s)	81	22.20	77.80	
Other	2	0.00	100.00	

Note: [1/]30 Thai Baht ≈ 1 US dollar.

*significant at the level of significance of P<0.05

Consumer Attitudes toward Organic agricultural products

From this study, the results demonstrated that the main reasons for the organic buyers to purchase organic products had been that the products were good for their health and for the health of their family members (95%), which is an attractive factor that can persuade consumers to purchase the products. This was followed by 94% of respondents, who noted that organic agricultural products do not contain pesticide residues, which is good for the environment. Moreover, about 90% and 88% of respondents had been shopping for organic agricultural products due

to the factor of quality control and for the purpose of supporting local farmers by buying their products, respectively (**Table 3**). In addition, consumers had also displayed positive attitudes towards organic agricultural products. More than 90% of respondents had considered that consuming organic products helps to protect the environment. In Khon Kaen Province, there are several main motives for purchasing organic agricultural products: 1) deriving the expected benefits for health and the environment, 2) carrying out quality control measures for the products, and 3) supporting local farmers. Health and environmental benefits have been reported to be the main motives for the intention to purchase and the willingness to buy (Roddy et al., 1996; Lockie et al., 2004; Molla-Bauza et al., 2005; Robles et al., 2005; Engel, 2008; Magistris and Gracia, 2008; Roitner-Schobesberger et al., 2008; Ahmad and Juhdi, 2010; Sangkumchaliang and Huang, 2012; and Kouy et al., 2016). Furthermore, the results of this study revealed that product appearance is one of factors that had affected the consumers' decisions to purchase organic agricultural products. In addition, more than 60% of respondents had listed that the taste, smell, and color of the products, as well as the attributing appearance factor had influenced their buying decisions.

Regarding price perceptions, consumers noted that they had found the price for organic agricultural products to be "Reasonable" (42.50%). However, about 37% of respondents considered the prices the prices to be "High", while about 14.30% considered the prices to be "High" when compared to conventional agricultural products. According to consumer groups and price perceptions toward organic produce, the results demonstrated that organic buyers (50.40%) had seemed to have positive perceptions about the prices. Organic buyers mentioned that they considered the prices of organic agricultural product to be "Reasonable". In contrast, about 51.70% of non-organic buyers considered that the price of organic products to be "High". The results in the **Table 4** show that the price of organic agricultural products was the main reason that had stopped non-organic buyers (81.40%) from purchasing organic agricultural products. This finding was supported by results from earlier studies, which reported that price had been an important obstacle, which can affect non-buyers (Tsakiridou, et al., 2008). Moreover, empirical studies pointed out that price perceptions can affect consumer behaviors (Lea and Worsley, 2005; Magistris and Gracia, 2008; and Ahmad and Juhdi, 2010). Furthermore, the premium price for organic products does directly impact consumption levels. With respect to organic agricultural products, the results showed that there had been a relationship between price perceptions and the frequency of purchase with a significant difference (χ^2=14.636, p=0.006). Organic buyers (40.10%), who determined that the price for organic products was "Reasonable" and those organic buyers (41.70%), who determined the price as "Not high", seemed likely to purchase often. In contrast, those organic buyers, who had deemed that the price for organic products was "High" were more likely to seldom purchase them (55.20%).

Furthermore, it was found that consumer trust and the availability of organic agricultural products had also affected consumer's decisions to buy. Approximately 45% of the respondents had stated that they had trust in organic agricultural products that had labels. The issue of availability was also found to be a concern because about 78.50% of the consumer were found to not be satisfied with the availability of products and the number of markets offering organic agricultural products. In addition, 74% of the consumer respondents mentioned that there was a limited variety of organic agricultural products available. Furthermore, how the people receive their information on organic products is

also important because it can increase consumer perceptions about and their knowledge of organic agricultural products. From the results, it was shown that 37.30 % of consumers had gotten their information about organic agricultural products from their family members or friends. Moreover, regarding the types of media from which they had received information on organic produce, the respondents mentioned that their information had come from newspapers/magazines (17%), the Internet (16.60%), radio/television (14.90), and from advertising signs (12.20%).

Table 3 The most important reasons for shopping for organic agricultural products (n=282)

Reasons	Percentage distributions
1. They are good for my health and my family's health.	95.00
2. They are good for the environment.	94.30
3. There are no pesticide residues.	94.30
4. There is quality control.	90.10
5. It supports the local farmers.	87.90

Table 4 The most important reasons for **not** shopping for organic agricultural product (n=118)

Reasons	Percentage distributions
1. Organic products are too expensive.	81.40
2. Organic agricultural products are difficult to find.	80.50
3. I think that nothing about them is special.	69.50
4. Safe vegetables are safe enough for me.	69.50
5. I do not trust the organic label, and I do not think that the products are truly organic.	47.50

Testing the Measurement Model

The consumers' intention to purchase organic agricultural products was analyzed by using Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM). The TPB model was used to construct the model. The constructs of attitudes toward organic agricultural products, subjective norms, and perceived behavioral controls were all used to predict the consumers' intention about purchasing organic agricultural products. CFA and SEM were used to assess the Goodness-of-fit statistics of the measurement model and the overall relationships among the constructs. Through repeated filtering, it was ensured that there was a good fit for the measurement. The final model consisted of 9 indicators with a 0.796 reliability of Cronbach's α. The overall goodness-of-fit indices for the measurement model were as follows: χ^2= 38.839 ($p<0.001$) and the χ^2/df=1.849 (smaller than 3 was suggested by (Carmines and McIver, 1981)). The evaluation of the model following the goodness-of-fit index was as follows: a) (GFI) = 0.980, b) the comparative-fit index (CFI) =

0.976, c) the adjusted goodness-of-fit index (AGFI) = 0.956, d) the normed-fit index (NFI) = 0.972, and e) the root means square error of approximation (RMSEA) = 0.046. The suggestions for the criteria for the measurement model were that the GFI, CFI, and NFI should be greater than 0.9 and that the RMSEA should be less than 0.5, which is the traditional minimum suggestion (Iacobucci, 2010). Both convergent validity and discriminant validity were assessed. Examining convergent validity allows two additional measures to be explored: the Average Variance Extracted (AVE) for each construct and Construct Reliabilities (CR).

Table 5 The overall reliability of the constructs and the standardized loadings of the indicators

Constructs	Indicators	Cronbach's α	Standardized loadings	t-values	CR	AVE
Attitudes	AENVIRON	0.836	0.763	(0.000)[a]	0.844	0.644
	ASAFE		0.875	16.472		
	AQUALITY		0.764	14.608		
SN	SCFCS	0.771	0.709	(0.000)[a]	0.736	0.657
	SEXCS		0.886	6.662		
PBC	PBNDY	0.838	0.870	(0.000)[a]	0.839	0.723
	PBMDY		0.830	8.122		
Intentions	ISAFE	0.683	0.749	(0.000)[a]	0.684	0.520
	ITRUST		0.693	9.855		

Note: *significant at the level of significance of 0.001. [a]Values were not calculated because the loading was set to 1.0 to fix the construct variance

The Testing of the Structural Model

The structural model of the causal relationships between the constructs in the proposed model is presented in **Figure 1**. The results indicated that the overall model had been satisfactory in terms of its goodness-of-fit indices since all of the suggested values had been met as follows: a) χ^2= 38.839 (p<0.01), b) the χ^2/df = 1.849, c) GFI = 0.980, d) AGFI = 0.956, e) CFI = 0.987, f) NFI = 0.972, and g) RMSEA = 0.046. The suggested criteria for the measurement model of GFI, CFI, and NFI should be greater than 0.9, while the RMSEA should be less than 0.5, which is the traditionally minimum suggestion (Iacobucci, 2010). The path coefficients, standardized path coefficients, and the t-values are reported in **Table 5**.

Hypothesis Verification and Testing of Parameters

The results from the structural model analysis, which was based on the Theory of Planned Behavior framework, is shown in the path diagram (**Figure 1**). Consumers' intention to purchase organic Agricultural Products is determined by their attitude towards organic agricultural products, subjective norm, and perceived behavioral control. The model shows a positive relationship among all the constructs. The positive relationship between attitudes toward organic

agricultural products and the intention to purchase organic products (β_{H1}= 0.60, t = 8.501) revealed that the positive attitudes toward organic agricultural products had indicated that the consumers had higher intentions to purchase, and therefore, the H1 hypothesis was supported (**Table 5**). This indicated that the attitudes toward organic products had affected the consumers' intentions to purchase organic agricultural products. Thus, consumers in this study are concerns about environmental protection, food safety, and food quality. This is because organic agricultural products are perceived as less damaging to the environment than conventionally production (Chen, 2007; Tsakiridou et al., 2008; Sangkumchaliang and Huang, 2012). In regard to H2, the positive estimate of coefficients between the subjective norms and intention to purchase were found to be positive (β_{H2} = 0.15, t = 2.406), which indicated that the perceived social pressure had had an influence on the intention to purchase. As a result, H_2 was supported. However, subjective norms had positive influences to intention to purchase organic products varied in difference areas (Arvola et al., 2008). In addition, the study of Aertsens et al. (2011) demonstrated that subjective knowledge is positively related to a more positive attitude towards organic food. Regarding H3, the positive estimate parameter for perceiving behavioral control, which refers to their perceptions of ability to perform a behavior (β_{H3} = 0.17, t = 2.524), had had a positive influence on their intentions to purchase agricultural products. The result of this study was supported by the study of Chen (2007). The previous study shows that the consumer's perceptions of personal control in a purchase situation, those who perceive more behavior control have more intention to purchase.

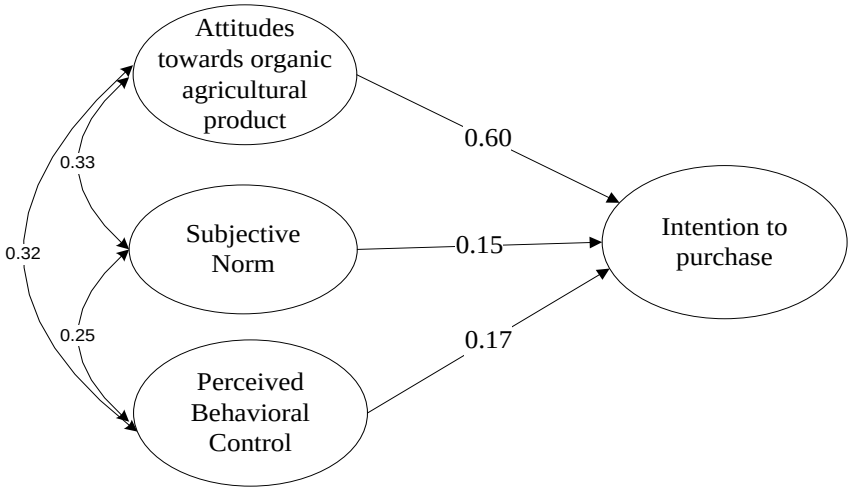


Figure 1 The structural model of the intention to purchase organic agricultural products by the Northeastern Thai consumers

Table 6 The results of the Hypothesis for the Structure Equation Model

Research Hypotheses	Path coefficients	Standardized path coefficients	t-values	Conclusions
H1: attitude → intentions	0.65	0.60	8.501 (p≤0.001)	Supported
H2: Subjective norms → intentions	0.13	0.15	2.406 (p=0.016)	Supported
H3: perceived behavioral control → intention	0.14	0.17	2.524 (p=0.012)	Supported

Conclusions

This study investigated the factors that determine the consumers' intentions to purchase organic agricultural products. The organic buyers in Khon Kaen province tended to be elderly and to have higher educational levels. Moreover, they were more likely to have higher incomes. The results of this study indicated that if consumers had higher levels of education and higher incomes, then they would be more likely to purchase organic agricultural products given the factor of their premium price. The main motives to purchase organic agricultural products were determined to be health and environmental benefits, food safety, the quality control of products, and support for local farmers. The main barriers to attaining market share for organic agricultural products were determined to be price perspective, product accessibility, and the availability of substitute goods, such as safe vegetables. In addition to the TPB model, the consumer's intention to purchase organic agricultural products in Khon Kaen Province were examined. The study found that three factors had had a significantly positive influence on consumers' intentions in Khon Kaen to purchase organic agricultural products. They were health and environmental consciousness, food safety, product quality, and support to local farmers. From the study, three factors were confirmed. These were attitudes, subjective norms, and perceived behavioral control - all of which had affected the consumers' intention to purchase organic agricultural products. The findings from this research are valuable because they suggest that farmers, organic food entrepreneurs, and supermarket should convince consumers that organic agricultural products are safe, promote good health, and are environmentally friendly. Moreover, the farmers and marketers should prioritize the market segmentation based on the consumers' genders, educational levels, and income levels. These findings can help producers, entrepreneurs, and marketers to better understand what creates added value of the organic agricultural products in consumers' perception and attitude. The marketers can use the results to apply for offline and online marketing strategies, which make an offer that is in line with their expectations and preferences.

Acknowledgement

This work was financially supported by the young researcher development project of Khon Kaen University. Thank you for facility form Department of Agricultural Economics, Faculty of Agriculture, Khon Kaen university.

References

Aertsens, J., K. Mondelaers, W. Verbeke, J. Buysse, and G.V. Huylenbroeck. 2011. The influence of subjective and objective knowledge on attitude, motivations and consumption of organic food. British Food Journal. 113(11): 1353-1378.

Ahmad, S. N. B., and N. Juhdi. 2010. Organic food: A study on demographic characteristics and factors influencing purchase intentions among consumers in Klang Valley, Malaysia. International Journal of Business and Management. 5(2): 105-118.

Ajzen, I. 1991. Theory of planned behavior. Organizational Behavior and Human Decision Processes. 50: 179-211.

Arvola, A., M. Vassallo, M. Dean, P. Lampila, A. Saba, L. Lahteenmaki, and R. Shepherd. 2008. Predicting intention to purchase organic food: The role of affective and moral attitudes in the Theory of Planned Behaviour. Appetite. 50: 443-454.

Aygen, F.G. 2012. Attitudes and behavior of Turkish consumers with respect to organic foods. International Journal of Business and Social Science. 3(18): 262-273.

Bravo, C. P., A. Cordts, B. Schulze, and A. Spiller. 2013. Assessing determinants of organic food consumption using data from the German National Nutrition Survey II. Food Quality and Preference. 28: 60-70.

Carmines, E. G., and J. P. McIver. 1981. Analyzing models with unobserved variables G. W. B. In Bohrnstedt, E.F. [Eds.] (Ed.) Social measurement: Current issues.

Chen, M. F. 2007. Consumer attitudes and purchase intentions in relation to organic foods in Taiwan: Moderating effects of food-related personality traits. Food Quality and Preference. 18: 1008-1021.

Chouichom, S., and M. Yamao. 2010. Comparing opinions and attitudes of organic and non-organic farmers towards organic rice farming system in north-eastern Thailand. Journal of Organic Systems. 5(1): 25-35.

Engel, W. 2008. Determinants of consumer willingness to pay for organic food in South Africa. University of Pretoria, Pretoria.

Iacobucci, D. 2010. Structural equation modeling: Fit indices, sample size, and advanced topics. Journal of consumer Psychology. 20: 90-98.

Kouy, S., P. Sangkumchaliang, and S. Aditto. 2016. Consumers' attitude and intention to purchase organic foods in Cambodia. International Journal of Business. 21(4): 328-341.

Kouy, S., P. Sangkumchaliang, and S. Aditto. 2016. Organic food market trend and consumers' profile in Phnom Penh city, Cambodia. Khon Kaen Agricultural Journal. 44(2): 343-350.

Lea, E., and T. Worsley. 2005. Australians' organic food beliefs, demographics and values. British Food Journal. 107(11): 855-869.

Lockie, S., K. Lyons, G. Lawrence, and J. Grice. 2004. Choosing organics: a path analysis of factors underlying the selection of organic food among Australian consumers. Appetite. 43: 135-146.

Magistris, T., and A. Gracia. 2008. The decision to buy organic food products in Southern Italy. British Food Journal. 110 (9): 929-947.

Molla-Bauza, M. B., L.M.C. Martinez, A.M. Poveda, and M. R. Perez. 2005. Determination of the surplus that consumers are willing to pay for an organic wine. Spanish Journal of Agricultural Research. 3(1): 43-51.

Mondal, S., T. Haitook, A. Promkhambut, A.M.A. Faisal, and M. E. A. Pramanik. 2014. Constraints of organic vegetable production in northeast Thailand. Khon Kaen Agricultural Journal. 42(1): 387-394.

Pornpratansombat, P., B. Bauer, and H. Boland. 2011. The adoption of organic rice farming northeastern Thailand. Journal of Organic Systems. 6(3): 4-12.

Radman, M. 2005. Consumer consumption and perception of organic products in Croatia. British Food Journal. 107(4): 263-273.

Ratanasatien, P., U. Ketunuti, and A. Tantichodok. 2005. Positioning of biopesticides in Thailand. Paper presented at the 6th Pacific Rim Conference on the Biotechnology of Bacillus thuringiensis and its Environment Impact, Victoria BC.

Rattanasuteerakul, K., and G. B. Thapa. 2012. Status and financial performance of organic vegetable farming in northeast Thailand. Land Use Policy. 29: 456-463.

Robles, R. R., L. Vannini, T. Puente, and J. F. Revuelta. 2005. Consumer attitudes behind organic food perception: A illustration in a Spanish area. Paper presented at the Future of Rural Europe in the Global Agri-Food System, Copenhagen, Denmark.

Roddy, G., C.A. Cowan, and H. George. 1996. Consumer attitudes and behavior to organic foods in Ireland. Journal of International Consumer Marketing. 9(2): 41-63.

Roitner-Schobesberger, B., I. Darnhofer, S. Somsook, and C. R. Vogl. 2008. Consumer perceptions of organic food in Bangkok, Thailand. Food Policy. 33: 112-121.

Sangkumchaliang, P., and W. C. Huang. 2012. Consumers' perceptions and attitudes of organic food products in northern of Thailand. International Food and Agribusiness Management Review. 15(1): 87-102.

Tarkiainen, A. and S. Sundqvist. 2005. Subjective norms, attitudes and intentions of Finish consumers in buying organic food. British Food Journal. 107(11): 808-822.

Thapinta, A., and P. F. Hudak. 1998. Pesticide use and residual occurrence in Thailand. Environmental Monitoring and Assessment. 60: 103-114.

Tsakiridou, E., C. Boutsouki, Y. Zotos, and K. Mattas. 2008. Attitudes and behavior towards organic products: an exploratory study. International Journal of Retail & Distribution Management. 36 (2): 158-175.

Ueasangkomsate, P. and S. Santiteerakul. 2016. A study of consumers' attitudes and intention to buy organic foods for sustainability. Procedia Environmental Sciences. 34: 423-430.

Voon, P. J., S.K. Ngui, and A. Agrawal. 2011. Determinants of Willingness to purchase organic food: an exploratory study using structural equation modeling. International Food and Agribusiness Management Review. 14: 103-120.

Wier, M., K.O.D. Jensen, L.M. Andersen, and K. Millock. 2008. The character of demand in mature organic markets: Great Britain and Denmark compared. Food Policy. 33: 406-421.

Zanoli, R., D. Gambelli, and D. Vairo. 2012. Scenario of the organic food market in Europe. Food Policy. 37: 41-57.

Zepeda, L., H.S. Chang, and C. Leviten. 2006. Organic food demand: A focus group study involving Caucasian and African American shoppers. Agriculture and Human Values. 23: 385-394.