Are Thai urban consumers willing to pay higher prices for "certified organic vegetables"?

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Abstract
The objective of this paper is to assess whether Thai urban consumers are willing to pay higher prices for certified organic vegetables. The Chinese kale is used as a case study due to high chemical residues in conventional production. The data is obtained from a survey of 706 urban consumers throughout 4 regions of Thailand. The contingent valuation method with double bounded dichotomous choice with open-ended follow-up technique is used to assess the value of willingness to pay (commonly abbreviated WTP). The WTP for a premium as well as the value of WTP are estimated using the logistic regression and ordinary least square regression model, respectively. The empirical results indicate that 51percent of respondents are willing to pay a premium for a certified organic Chinese kale. Consumers' concern on environmentally-friendly vegetable production and perceptions regarding the meaning of organic vegetable, the product availability that there is no real organic one, and the organic certification that represents high quality attributes have positive influences on the likelihood to pay for a premium and the value of willingness to pay for a certified organic kale. Perceived information of effects of chemical residues on human health and consumers' perceptions of the production process that requires intensive farming practices also have positive influences on the likelihood to pay for a premium. Changing consumer attitudes from different level of consumers' perceptions can monotonically increases the likelihood to pay a premium. As such, marketing efforts should focus on providing information and raising the awareness of environmentally vegetable production and organic vegetables. This paper is the first that directly tests the influences of various consumers' perceptions, concern and perceived information on WTP a premium fora certified organic kale, using a large data set of urban consumer surveys of all regions in Thailand.

1. Introduction

Generally, vegetable production in Thailand relies on chemical fertilizers and pesticides, however, nowadays consumers are more concerned with health and environment, raising their awareness of food safety and environment sustainability. The increasing awareness of Thai urban consumers, particularly in Bangkok caused Thai domestic organic market to grow steadily. The estimated value of domestic organic products was 68million dollar in 2015 and vegetables and fruits had the largest volume of sale, accounted for 66 percent of total domestic volume (Kongsom & Panyakul, 2016).However, the Thai organic market sold domestically is a high-end niche market which is limited to few major cities such as Bangkok and Chiangmai as only few consumers regularly purchased organic products with higher price. In addition, major Thai consumers do not obtained necessary information about organic vegetables such as the meaning, the production process, the impact of chemical residues of ordinary vegetable on human health, and the organic certification. Particularly, consumer trust is a crucial issue in the organic market as consumers are not able to verify whether a product is an organic one (Janssen & Hamm, 2011). Organic certification helps consumers to verify that vegetables are real organic and to ensure quality. Lacks of information about organic vegetables and organic certification standards might be reasons for Thai urban customers not willing to pay a premium for organic vegetables. The lower demand for high

premium price for organic vegetables would reduce incentive for farmers to growand certify organic vegetables.

Most of the empirical studies, particularly in Europe and North America have examined the willingness to pay for an organic product (see, for recent example, Krystallis & Chryssohoidis, 2005; Jansse &Hamm, 2011; Strzok & Huffman, 2012; Bhavsar et al, 2016).Their empirical results indicated the significance of health and environmental concerns in explaining the WTP. However, in Thailand, the organic vegetable market is not well-developed and the level of consumers' awareness of health and environmental concerns are not as high compared to European and Northern America consumers. In addition, Roitner-Schobesberge (2006) pointed out that a majority of Thai consumers lacked general and specific knowledge of organic foods, particularly the organic production method and organic labels. However, a limited number of studies such as Sriwaranun (2015) recently explored the WTP for organic products, including Kale in Thailand.However, their studies focus only Bangkok consumers, do not consider certified organic products and the effects of information, concern about environmentally-friendly vegetable production, and consumers 'perceptions of organic vegetables on WTP a premium for certified vegetables have not yet been directly empirically tested.

The objective of this paper is to develop an econometric model to explore whether Thai urban consumers are willing to pay higher prices for certified organic vegetables. The Chinese kale is used as a case study due to high chemical residues in conventional production. This paper explores how various information and consumers' perceptions of organic vegetables associated with the concerns of health, environment and certification affect consumer likelihood of premium purchase and willing to pay for a certified organic Chinese kale. This study generates two major contributions. First, the large data set of urban consumer surveys of all regions in Thailand is used to allow for the robustness of consumer behaviours, rather than focusing only the consumers in the capital, Bangkok. Second, the level of concern on environmentally-friendly vegetable production, perceived information of the chemical residues impact on health and consumers' perceptions of organic vegetables regarding the meaning, the production process, the availability and the organic certification on WTP a premium are initially tested empirically.

The next section presents a brief literature review of methods for measuring WTP, some of which are then used in empirical models. Then the data and methodology and its results are discussed, before presenting the conclusion and recommendation.

2. A Brief Literature Review of Methods for Measuring WTP

The empirical literature that assess the willingness to pay (WTP) for organic foods or products can be categorized into two groups, based on the state preference valuation or the revealed preference valuation.

For the state preference approach, consumers are asked to state their preferences for hypothetical situations using contingent valuation method (CVM) or choice model technique in estimating WTP. The CVM is based on utility maximization theory and can be viewed as estimating the change in expenditure or indirect utility function. An individual will chose organic over conventional products if there is an improvement in quality. That is, the utility of consuming organic products is higher than that of conventional products. Most studies apply the CVM by employing the double-bounded dichotomous choice(DBDC) method (Krystallis & Chryssohoidis, 2005; Owusu & Anifori, 2013;Sriwaranun, 2015). In the DBDC approach, two consecutive bids are proposed to a consumer. The first question is "Are you willing to pay a given amount of money, equally to the first bid for the specific organic product?" If consumer says" yes", higher amount of bid will be given in the second question and if says "no", lower amount of bid will be given. The true value of WTP for double-bounded dichotomous approach is unobservable of the true WTP. Four possible ranges of the maximum WTP with values for lower and upper bounds are (1) "Yes" to both bids (Yes/Yes), (2) "Yes" followed by "No" (Yes/No), (3) "No" followed by "Yes" (No/Yes), and (4) "No" to both bids

(No/No). The DBDC has proved to be more efficient (Hanemann et al, 1991) and reduce time in surveying at supermarkets (Hai et al, 2013). However, a number of biases and incentive incompatible responses have been found in the DBDC method and the magnitude of the bias is lower in the DBDC with open-ended follow-up (DBDC-OE) method (Ternent et al, 2010).After the respondents responded to the double-bounded question they were asked an open-ended question to indicate their maximum WTP for particular products. Sriwaranun (2016) also estimated WTP of organic products based on the DBDC-OE method for more reliable and reasonable WTP estimates.

The choice model technique using discrete choice experiments are also employed to examine consumer attributes for organic product. The conjoint analysis is conducted to assess consumer's value of attributes for organic apples and milk(Wang &Sun, 2003). Stolz et al. (2011) used choice experiments to investigate occasional organic consumer preferences for milk, yogurt and apples.

For the revealed preference approach, consumers' preferences on organic products are revealed through their actions inreal markets. Few literature on organic product applies hedonic price model based on the revealed preference approach due to the limitation of the size of organic market. Griffith & Nesheim (2013) usedrich data on households purchases of food in the UK where organic is a relevant characteristic to estimate lower and upper bounds on willingness to pay for baskets of organic foods.

This study measures the WTP for a certified organic Chinese kale based on the state preference for hypothetical situations as the certified organic Kale is not widely available in the market. The DBDC-OE method is used for assessing reliable and reasonable WTP value.

3. Data and Methodology

The data is obtained from a survey of 718 urban consumers representing all regions of Thailand in 2015. Within each region, the sample provinces were selected with probability proportional to population. The survey targeted respondents at stores sold vegetable in fresh market where conventional vegetable are sold; hypermarkets and supermarkets, where organic and conventional vegetables are sold; and the specialty health/organic stores.

The questionnaire was developed for (1) collecting socio-demographic characteristics of respondents, perceived information about impact of chemical residues on health, consumers' concern on environmentally-friendly vegetable production, consumers' perceptions regarding the meaning of organic vegetables, the production process, the availability and organic certification ,and (2) for assessing the willingness to pay a premium for the organic Chinese kale. Five-point Likert scale (1= "strongly disagree" and 5 ="strongly agree") were used to measure consumers' perceptions by asking respondents to rate their opinions whether they agree or disagree with a number of statements (see Table 2).

In assessing the willingness to pay for the organic Chinese kale, respondents were first asked whether they are willing to pay for the certified organic Chinese kale at the higher price than the conventional Chinese kale. If "yes", the willingness to pay is assessed using the DBDC-OE method. Thereby, respondents were asked whether they would pay a specified price (The first bid) for the certified organic Kale, higher than the average price of conventional Chinese kale (50 Baht per kilogram). If "yes", another WTP question was asked using a higher price (High price bid). If "no", the lower price is offered (Low price bid). Finally, the open-ended question is used to ask respondents to indicate the maximum value of WTP for certified organic kale (See figure 1). In addition, it is assumed that the true WTP would not be lower than the conventional price. If the respondents are not willing to pay for a premium, the WTP is set to 50 Baht per kilogram (USD 1.5 per kilogram), a conventional price of general kale.

The bid design was based on the distribution of the WTP in the pre-test questionnaire of 60 samples. The three highest frequencies of the pre-test WTP was used for 3 different starting bids (75 Baht or USD 2.2 per kilogram , 100 Baht or USD 2.9per kilogram and 125 Baht per kilogram) for the double-bounded WTP question. The high price bid increases to less than 2 times of the first bid such

that high offering price caused respondents to answer no. The low price bid reduces to less than ½ of the first bid such that low offering price caused respondents to answer yes. Three different versions of the questionnaire corresponding to three different starting bids were randomly selected to the respondents (Table 1).

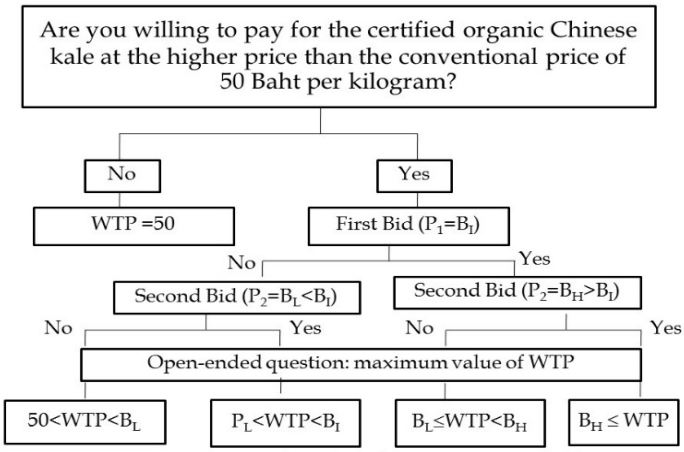

Figure 1: WTP based on the DBDC-OE method

First bid	Second bid (Baht per kilogram)	
(Baht per kilogram)	Higher price	Lower price
75	100	60
100	150	75
125	180	90

Table 1: Three versions of first bid and second bid corresponding to the three different starting bid

The paper employs the log it model to explore the determinants of the likelihood to pay for a premium of a certified organic Chinese kale. Decision to pay for a premium, a dependent variable, equals one if respondents are willing to pay a premium. In addition, the amount of WTP for a certified organic Chinese kale is estimated using the ordinary least square regression. The amount of WTP assessed from the survey based on the DBDC-OE technique is used as an independent variable. Both models use same independent variables shown in Table 2.

Hypothesis of this study is that respondents who are more concerned with the environmentally-friendly vegetable production are more willing to pay a premium price. Consumers with perceived information of effects of chemical residues on human health would consider risks of health hazards due to chemical residues; thus are willing to pay higher price for a certified organic vegetable for an assurance of not having chemical in vegetable growing process.

Consumers' perception of organic vegetable can be seen in a variety of contexts such as "natural vegetables", "no chemical vegetables" and "health food". Moreover, some consumers do not know what organic vegetable is. Our hypothesis is that consumers who perceive organic vegetables as "health food" would be willing to pay higher price for a certified organic vegetable than those perceived as "no chemical", "natural", and "do not know" respectively.

Consumers with higher level of agreement that growing organic vegetable requires intensive farming practices are more willing to pay a premium for a certified organic vegetable due to high labour intensity of organic vegetable production to prevent pest and disease as chemical herbicides and pesticides cannot be used in production process. Consumers with higher level of agreement that there is no real organic vegetable are less willing to pay a premium for certified organic vegetable. Consumers who rank the organic certification as the top three attributes for high quality vegetables are more likely to pay a premium for certified organic vegetable. In addition, the willingness to pay increases with the numbers of children members and income.

Variables	Definition of variables	Hypothesized signs
Environmentally-friendly production concern	1 =if the respondent agrees or strongly agrees that environmentally-friendly vegetable production is very important, 0 otherwise	+
Perceived information of chemical residues impact	1=if yes, 0 = if no	+
Perception of the meaning of organic vegetables	0 = if the respondent does not know what organic vegetables are, 1 = if the respondent perceives as "natural vegetables " 2 ="no chemical vegetables" and 3 = "health food"	+
Perception of the production process	Level of agreement that growing organic vegetable requires intensive farming practice (Likert scale of 5 : 1=strongly disagree 2= disagree 3= Neither agree or disagree 4=agree 5= strongly agree)	+
Perception of the availability	Level of agreement that there is no real organic vegetable (Likert scale of 5)	-
Perception of organic certification	1=if the respondent ranks the organic certification as the top three attributes for high quality vegetables, 0 = if the respondents ranks other attributes such as freshness, colour, appearance, texture, size, taste, high price vegetables, and food safety certification label	+
Children members	The number of children members under six years old (persons)	+
Income	Monthly income of respondents (Baht)	+

Table 2: Independent variables used in this study

4. Results and Discussions

The consumer survey results indicate that 51 percent of urban consumers in all regions of Thailand would be willing to pay a premium for a certified organic Kale with the average premium of 37 Baht per kilogram (1.1 USD per kilogram), or a 74 percent premium (Table 3 and 4). The result is consistent with Sriwaranun (2015)'s result that found Bangkok consumers would pay 80% higher for organic Kale and also concur with Hai et al. (2013) that found Vietnamese consumers would pay around 70% higher for organic vegetables than conventional ones.

WTP category	Frequency	Proportion
Not willing to pay for a premium	343	48.6
Willing to pay for a premium	361	51.4
-Willing to pay a premium of <=10 Baht per kg (<=20 % premium)	76	10.8
-Willing to pay a premium of 10-25 Baht per kg (20-50 % premium)	102	14.5
-Willing to pay a premium of 25-40 Baht per kg (50-80 % premium)	101	14.3
-Willing to pay a premium of >40 Baht per kg (>80 % premium)	84	11.9

Table 3: Distribution of WTP for a premium responses

Table 4 indicates that the percentage of respondents willing to pay a premium is higher for those who agree or strongly agrees that environmentally-friendly production is very important and for those who receive information of chemical residues impact on human health. Magazines, TV, radio and internet are major media channels. Considering the amount of premium for only those who are willing to pay for a premium, factors that significantly explain the differences in premium are environmentally-friendly concern, perception of the organic meaning, and perception of the availability that there are no real organic. Particularly, the average premium value is highest if respondents perceive organic vegetables as health food or strongly disagrees that there is no real organic vegetable.

Table 5 shows the sample statistics of the independent variables used in the empirical model and the analytical results of the differences in the means. The results show significant differences in the mean of all independent variables except children members between respondents who expressed WTP a premium and those who indicated unwillingness to pay a higher price (UWTP) for a certified Chinese kale compared to conventional one. The average scores of consumers' perceptions regarding

the meaning of organic vegetables and production process are significantly higher for WTP samples than UWTP samples. This indicates that respondents with WTP have higher degree of perceptions of organic vegetables towards non-chemical and health food and intensive farming practices. Respondents with UWTP have significantly higher levels of agreement that there is no real organic vegetable. Respondents with WTP have significantly higher degree of environmentally-friendly concern and higher degree of perceptions of certified organic vegetables towards high quality attribute. Respondents with WTP have higher proportions of those perceived information of chemical residue impact. Lastly, respondents with WTP have significantly higher levels of income than those with UWTP, as expected.

Determinants determining the likelihood to pay for a premium and WTP for a certified organic Chinese kale are presented in table 6. Overall, the estimated model can explain the likelihood to pay for a premium and the WTP as the chi-square and F statistics are significant at 99 percent level of confidence. Results of both models shared same four significant factors, which are consumers' concern of environmentally-friendly vegetable production and perceptions regarding the meaning of organic vegetable, the product availability that there are no real organic ones, and the organic certification that represents high quality attributes. However, socio-economic characteristics, including numbers of young child members and income are insignificant in explaining both the likelihood to pay for a premium and the value of WTP. Moreover, the perceived information of effects of chemical residues on human health and consumers' perceptions of the production process that requires intensive farming practices only have effects on the likelihood model but not the value of WTP.

	No. of respondents Willing to pay a premium (%)	The amount of premium for respondents willing to pay a premium			
		Mean	SD	Min	Max
Total	363 (51.4%)	37	26	4	150
Environmentally-friendly concern		Mean difference = 7**			
-Agrees or strongly agrees that environmentally-friendly production is very important	320 (45.3%)	37	27	4	150
-Otherwise	43 (6.1%)	30	19	5	100
Perceived Information of chemical residues impact on human health		Mean difference = 2			
-Yes	298 (42.2%)	37	26	5	130
-No	65 (9.2%)	35	29	4	150
Perception of the meaning of organic		F-Test =5.32*			
-Don't know	34 (4.8%)	27	18	4	100
-Natural vegetables	48 (6.8%)	34	27	5	130
-No chemical vegetables	170 (24.1%)	34	24	5	150
-Health food	111 (15.7%)	44	30	10	130
Perception of the production process that requires intensive farming practice		F-Test =1.348			
-Strongly disagree	33 (4.3%)	30	28	10	50
-Disagree	30 (4.2%)	44	35	10	130
-Neither disagree nor agree	81 (11.5%)	40	27	10	100
-Agree	182 (25.6%)	31	19	4	100
-Strongly agree	37 (5.2%)	37	27	5	130
Perception of the availability that there is no real organic		F-test =4.23**			
-Strongly disagree	122 (17.2%)	44	31	5	150
-Disagree	147 (20.8%)	36	26	5	130
-Neither disagree nor agree	69 (9.8%)	27	18	4	100
-Agree	21 (3.0%)	31	18	5	80
-Strongly agree	4 (0.6%)	34	8	25	40
Perception of organic certification		Mean difference = 3			
-as top three attributes for high quality	161 (22.8%)	35	25	5	150
-otherwise	202 (28.6%)	38	27	4	130

Table 4: Descriptive statistics of WTP for a premium responses and the amount of premium

Variables	Total N=706 (100%)	Consumers willing to pay for premium N=361 (51%)	Consumers unwilling to pay for premium N =343 (49%)	Mean differences
	Mean (SD)	Mean (SD)	Mean (SD)	
Environmentally-friendly concern (1=agrees or strongly agrees that environmentally-friendly vegetable production is very important, 0 otherwise)	0.84(0.36)	0.88 (0.32)	0.80 (0.40)	0.08*
Perceived information of chemical residues impact (1=yes 0 =no)	0.76(0.43)	0.82 (0.38)	0.70(0.46)	0.12*
Perception of the meaning of organic vegetables (0 =don't know 1 = "natural " 2 ="no chemical" 3 = "health food"	1.80(0.91)	1.99(0.90)	1.61 (0.88)	0.37*
Perception of the production process that growing organic vegetable requires intensive farming practice (1=strongly disagree 2= disagree 3= Neither agree or disagree 4=agree 5= strongly agree)	3.36 (1.09)	3.43(1.10)	3.27(1.08)	0.16***
Perception of the availability that there is no real organic vegetable (Likert scale of 5)	2.17 (0.98)	1.99 (0.93)	2.36 (0.99)	-0.37*
Perception of organic certification (1= perceive as the top three attributes for high quality vegetables, 0 otherwise)	0.45 (0.49)	0.56 (0.50)	0.35 (0.48)	0.21*
Children members (persons)	0.29 (0.62)	0.28 (0.65)	0.29 (0.65)	-0.02
Income (Baht per month)	20,855 (23,739)	23,078 (24,874)	18,501 (22,232)	4,576*

Table 5: Summary statistics of independent variables used in the empirical model
Note: *, ** and *** denote 1%,5%, and 10% significance levels.

Variables	**Model 1**		**Model 2**
	Coefficient	**Marginal effects**	**Coefficient**
Constant	-1.52*		55.19*
	(0.44)		(5.08)
Environmentally-friendly production concern	0.41*** (0.23)	0.101*** (0.06)	5.54** (2.69)
Perceived Information of chemical residues impact	0.37** (0.19)	0.093** (0.05)	2.41 (2.27)
Consumers' perceptions of the meaning of organic vegetable	0.38* (0.09)	0.095* (0.02)	5.69* (1.08)
Consumers' perceptions of the production process that requires intensive farming practices	0.14** (0.07)	0.036** (0.02)	1.10 (0.88)
Consumers' perceptions of the availability there is no real organic vegetable	-0.28* (0.09)	-0.071* (0.02)	-4.61* (1.01)
Consumers' perceptions of organic certification as high quality attributes	0.62* (0.17)	0.154* (0.04)	5.63* (1.96)
The number of younger members	0.03 (0.12)	0.0067 (0.03)	0.69 (1.44)
Income	0.000006 (0.000)	0.0000014 (0.000)	0.00002 (0.000)
Log likelihood	84.32	n.a.	n.a.
Prob> chi2	0.00	n.a.	n.a.
Predicted Probabilities	n.a.	n.a.	n.a.
F statistics	n.a.	n.a.	12.08
Prob>F	n.a.	n.a.	0.00

Table 6: Results of logistic regression on the likelihood to pay more for a certified organic Chinese kale (Model 1) and OLS regression results on the value of WTP for a certified organic Chinese kale (Model 2)
Note: Standard errors are in parentheses. *, ** and *** denote 1%,5%, and 10% significance levels.

Considering marginal effects among the consumers' concern and perceptions reported in table 6, consumers' perceptions of organic certification as high quality attributes have highest influences on the likelihood to pay a premium, followed by environmentally-friendly production concern, consumers' perceptions of the meaning of organic vegetable and perceived information of chemical residues impact on human health. Particularly, the likelihood to pay a premium for consumers who perceive organic certification as high quality attributes is 0.154 higher than those do not perceive. The probability of paying a premium for respondents who agree or strongly agree that environmentally-friendly vegetable production is very important is 0.101 higher than that with disagreement or neutral.

Marginal effects of consumers' perceptions of organic vegetables, measured in likert scale are calculated by estimating the changes in the probabilities of paying a premium at each Likert-scale level, holding the other independent variables at their mean level. All marginal effects obtained from a given Likert-scale variables are monotonically increasing or decreasing (Table 7). The highest marginal effects of 0.0947 are found if consumer perceptions about organic vegetables are changed from "natural vegetables" (Score =1) to "no chemical vegetables" (Score =2). Changing attitudes from a "neither disagree nor agree" opinion (Score =3) with the statement "there is no real organic vegetable" to "disagree" (Score =2), the probability of paying a premium increases by 0.0712.Changing the attitudes from a "disagree" opinions (Score =2) to "neither disagree nor agree" opinions (Score =3) about the organic vegetable production requires intensive farming practices increases the likelihood to pay a premium by 0.036.

Variables	Changing the value of independent variables					
	0	1	2	3	4	5
Consumers' perceptions of the meaning of organic vegetables (0 =don't know 1 = "natural " 2 ="no chemical" 3 = "health food")	0.3485	0.4389 (0.0904)	**0.5336 (0.0947)**	0.6259 (0.0923)		
Consumers' perceptions of the production process that requires intensive farming practices (1=strongly disagree 2= disagree 3= Neither agree or disagree 4=agree 5= strongly agree)		0.4304	0.4662 (0.03573)	**0.5023 (0.03608)**	0.5383 (0.03606)	0.5740 (0.03566)
Consumers' perceptions of the availability there is no real organic vegetable (1=strongly disagree 2= disagree 3= Neither agree or disagree 4=agree 5= strongly agree)		0.5975 (0.0701)	**0.5274 (0.0712)**	0.4563 (0.0694)	0.3869 (0.0651)	0.3218

Table 7 Probabilities of paying a premium at each Likert-scale level, holding the other independent variables at their mean level

Note: Marginal effects are shown in parentheses.

5. Conclusions and Recommendations

This study has analysed the WTP a premium price for a certified organic Chinese kale, using a survey data collected in 2015 from 706 urban consumers in all regions of Thailand. Particularly, the paper aims at empirically testing the influences of information and consumers' perceptions of organic vegetables and chemical residues on WTP. This study also examines the determinants of the likelihood of consumers' WTP for a premium using a log it model and factors explaining the value of WTP using a multiple least square regression.

Results of a contingent valuation survey indicate that 51 percent of respondents would be willing to pay a premium for a certified organic Kale with the average premium of 37 Baht per kilogram (1.1 USD per kilogram), or a 74 percent premium. Thai urban consumers are more likely to pay a premium and have higher value of WTP if they are more concerned with environmentally-

friendly vegetable production, perceive organic vegetables with a higher degree of recognition towards health food, rank the organic certification as the top three attributes for high quality vegetables, and have high level of disagreement that there is no real organic vegetable. The perceived information of effects of chemical residues on human health and the perception that organic vegetable farming requires intensive farming practices have positive influences on the likelihood to pay for a premium but have insignificant influences on the amount of WTP. The numbers of young children members and income is insignificant in explaining both the likelihood and the WTP value. However, results from descriptive statistics show that respondents with WTP have significantly higher levels of income than those with UWTP, as expected.

Changing consumer attitudes from different level of consumer perception can monotonically increases the likelihood to pay a premium. As such, marketing efforts should focus on providing information and raising the awareness of environmentally vegetable production and organic vegetables. Thai government and marketers should launch communication campaigns to consumers regarding the meaning of Thai certified organic standard and its label, the requirement of the production process to meet the organic standard, including no chemical inputs, environmentally-friendly production and intensive farming practices. This would enable greater awareness and build consumers' trust in quality of certified vegetables. Moreover, Thai government should provide research support regarding health benefits of eating organic vegetables and effects of chemical residues in conventional vegetable production. The information of this research should be conveyed to consumers.

6. Direction for Future Research

Different labels and certification organic standard logos are recently found in vegetable organic products in Thailand. Future research should investigate the effects of consumers' trust in different labels and certification standard logo on the WTP.

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