Nat. Volatiles & Essent. Oils, 2021; 8(6): 463-471

NVEO
Natural Volatiles & Essential Oils

Consumers Willingness To Pay For Certified Lettuce At Premium Prices: The Effect Of Environmentalism, Food Safety And Price Consciousness Factors

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Abstract

The demand for organic lettuce is increasing in Indonesia, but on the other hand, the use of chemical pesticides is also increasing. Certification has a role in eliminating information asymmetry between producers and consumers. Many researches on organic vegetables have been carried out, but those who look at the certification attributes are still lacking. This study aims to analyse consumers' willingness to pay (WTP) for certified organic lettuce at premium prices using national online survey in Indonesia. The results of binary logistic regression analysis show that the value of environmentalism has the strongest positive influence on consumers' WTP. Furthermore, food safety consciousness has a significant positive effect, while price consciousness has a negative effect. The results of this study provide implications for an efficient marketing strategy for producers or marketers of certified organic lettuce.

Keywords: organic certification, willingness to pay, premium price, consumer valuation, lettuce

Introduction

Vegetables are the most widely consumed agricultural products. In Indonesia, the average expenditure on vegetable consumption increased by 44.1% (BPS, 2017). An increase in consumption occurs in middle to upper class consumers on certain types of vegetables that emphasize certain qualities or types, such as pesticide-free and organic vegetables. Public awareness on the negative effects of pesticides, chemical fertilizers and genetically modified products has changed consumption patterns or people's lifestyles to become more selective and wise in choosing the products they will consume (Teng & Wang, 2015).

Leaf vegetables that are widely consumed are lettuce (Rabelo et al., 2018). Lettuce is the most economically valuable leaf vegetable crop (Engindeniz & Tuzel, 2006; Islam et al., 2021; Shatilov et al., 2019). The demand for lettuce is mainly driven by the health benefits it contains (De Carvalho et al., 2015), and the massive socialization, promotion and movement to consume healthy food in Indonesia (David & Ardiansyah, 2017). The export value of lettuce from Indonesia to foreign countries is USD 1,7 million per year with a volume of 1,5 – 2 tons (Comtrade, 2019). This value is

very far from the proportion of the world lettuce market (less than 1%) which reaches more than USD 2 billion (Shatilov et al., 2019). Judging from the export volume of Indonesian lettuce, it is indeed very small, but domestic demand continues to increase. The average Indonesian lettuce production is 39,3 tons per year, with a production growth rate of about 6% per year, while lettuce consumption is around 35 kg per capita per year (BPS, 2016).

The increase in demand for organic lettuce has not been matched by a decrease in the use of chemical pesticides in agricultural cultivation in Indonesia. The number of pesticides registered in the Ministry of Agriculture of Indonesia increases by an average of 220 brands every year (Ministry of Agriculture, 2016). The value of Indonesia's pesticide imports also continued to increase to reach $501,7 billion in 2017 (FAOSTAT, 2020). On the other hand, consumers are not able to distinguish between organic and conventional vegetables directly in the purchasing process. The only product attribute that provides information about the credibility of organic vegetables is the official organic certification label.

Organic certification plays a role in ensuring the quality or claims given to food products, so that they do not harm consumers (David & Ardiansyah, 2017). However, to take organic certification requires an additional process and costs for producers/marketers. Therefore, it is important for producers/consumers to target the right consumers, namely those who are willing to pay certified organic vegetables at premium prices. Most studies do not specifically explain the organic vegetables intended (Bhattarai, 2019; Sarma et al., 2020; Vijayan & Krishna, 2019), whereas consumers find various types of products in the real market, ranging from those without labels, with labels made by the seller, to officially certified organic labels. This study takes a position on the analysis of consumers' willingness to pay for organic lettuce with an officially certified label in Indonesia.

Healthy lifestyle factors and environmental concerns are the driving force for consumer purchases on the organic products (Rana & Paul, 2017). A healthy lifestyle is defined as the integration of health awareness in daily activities, including in choosing food. Environmental care is shown by a person's awareness of the problems that occur in the environment, then supports or shows an attitude of contributing to the solution (Yadav & Pathak, 2016).

This study aims to analyze the factors that influence consumers' willingness to pay for certified organic lettuce in Indonesia. In detail, this study wants to look at the demographic and lifestyle factors of consumers as measured by the value of environmentalism and food safety concern. Besides that, this study also looks at the effect of price awareness on consumers' willingness to pay. In addition to providing additional knowledge, this research provides practical contributions related to marketing strategies for producers and marketers of organic lettuce in Indonesia.

Material and Methods

This study uses purposive sampling to obtain respondents. Online surveys are run to collect data from respondents through social media and market places. Prospective respondents were found from sellers of organic vegetables in the marketplace, Instagram and Facebook. Furthermore, prospective respondents are contacted via private message by asking their availability first, if they are willing, the questionnaire link will be sent. The research area is limited to big cities on the island of Java, namely: Surabaya, Surakarta, Yogyakarta, Bandung, Jakarta.

In the purposive sampling technique, it is important to determine the respondent's criteria. The criteria for respondents in this study are the final/end consumers of organic vegetables, make regular purchases of organic vegetables and food shopping decision makers in the household. In

order to obtain respondents who meet the criteria, screening questions are applied at the beginning of the questionnaire including: frequency of purchasing organic vegetables, household shopping decision makers and domicile. Prospective respondents who do not meet any of the criteria are excluded from the analysis. Respondent who passed the screening questions received questions about demographics and 12 psychographic items. Next, we asked if they were willing to pay certified organic vegetables at a higher price.

Table 1. Variable operational definition

Variables	Dummy code	Measurement
Willingness to pay certified organic lettuce at a premium price	WTP	0 for Yes, 1for No
Respondent's age	AGE	Categorical, In years
Respondent's gender	GEN	0 for male, 1for female
Educational level	EDU	Categorical
Marital status	MAR	0 for married, 0 for single
Income per month	INC	Categorical, IDR Per month
Environmentalism	ENV	Scale 1 to 5
Food Safety Consciousness	FSC	Scale 1 to 5
Price Consciousness	PC	Scale 1 to 5

The independent variables in this study consisted of demographic and psychographic variables, while the dependent variable was the willingness to pay certified organic lettuce at a premium price (WTP) (Table 1). Demographic variables include age (AGE), gender (GEN), education (EDU), marital status (MAR) and income (INC). The psychographic instrument used is related to the value of Environmentalism (ENVI) from Kim, Lee, Gon Kim & Kim (2013), Food Safety Consciousness (FSC) from Michaelidou& Hassan (2008) and Price Consciousness (PC) from Alford & Biswas (2002) measured in 5 likert scale. WTP as the dependent variable is measured on a nominal scale using 2 options, namely paying and not paying certified organic vegetables at a premium price.

Data Analysis

The data collected were analyzed using descriptive statistics, then continued with binary logistic regression analysis. Logistic regression has advantages over other analytical techniques for the dependent variable in the form of dichotomous choice (Pituch & Stevens, 2020). To measure the reliability and validity of psychographic items, the analysis of Cronbach alpha and Pearson correlation were used (Appendix 1). If the alpha value is above 0,6 then the instrument is declared reliable, and if the correlation matrix shows $p < 0,05$ then it is declared valid. Furthermore, confirmatory factor analysis (CFA) was carried out to determine the factors in the research instrument (Appendix 2).

Result

A total of 575 respondents passed the screening question which indicated that they were consumers of organic vegetables. The results of the analysis of respondents' characteristics can be seen in Table

2. The proportion of respondents based on demographics in this study is not representative of the population of the island of Java. The main unit of analysis of this research is consumers of organic vegetables, so that the demographic data obtained is highly dependent on the respondents who pass the screening stage. In aggregate, the participants were dominated by women (77%), young people aged 18-39 years (78.3%). 72% of respondents have completed their undergraduate to doctoral higher education. The majority of respondents were married (58.1%). Based on income, respondents are dominated by the income group between 1-5 million per month (45.2%) which represents the middle class, and the group with an income of 5 to more than 10 million per month (26.2%) represent the upper group.

Table 2. Demographic Characteristics of Respondents

Variable		**Proportion (%)**	**Mean**
AGE	18 - 28 years	47.1	31.4 years
	29 - 39 years	32.2	
	40 - 50 years	17.2	
	51 - 60 years	3.4	
GEN	Men	23.0	0,77 (women)
	Women	77.0	
EDU	Primary	0,5	1,62 (higher)
	Secondary	37,5	
	Higher	62	
MAR	Married	58.1	0,42 (Married)
	Single	41.9	
INC	< 1 million	9.6	1,55 (Middle-up)
	1-5 million	45.2	
	5-10 million	26.2	
	> 10 million	19.0	

In general, respondents have high ENVI, FSC and FC scores (above the middle point). In detail (Table 3), respondents are environmentalists who care about the environment, feel they have social responsibility and will pay premium price for environmentally friendly products. Viewed from the FSC aspect, respondents are very aware of the use of synthetic food additives in food which will have a negative effect on health. Furthermore, even though the PC score is above the mid-point, this value is the lowest compared to the scores of other psychological factors in this study.

Table 3. ENVI, FSC and PC scores

Factors	Mean	Std Dev
Environmentalism		
Environmental Care	4.45	0.59
Social Responsibility	4.73	0.50
Recycling Used Goods	3.74	0.95

Buying Eco-Friendly Products	4.36	0.67
Buying Organic Food	4.13	0.78
Boycott of Polluters	3.76	1.03
Food Safety Consciousness		
Perception of Chemical Residues in food	4.14	0.96
Concerns on the synthetic Food Additives in food	4.51	0.78
Concerns on the Vegetable Safety	4.21	0.82
Price Consciousness		
Extra effort for lower price	3.52	1.07
Shop around for the cheapest prices	3.32	1.10
Comparing Time With Money	3.33	1.08

Table 4 shows the correlation between factors. ENVI had a significantly positive correlation with AGE and MAR, but the strongest was with FSC (r = 0,348; p < 0,001). WTP had significantly positive correlation with GEN, EDU, INC, and FSC, but the strongest correlation was with ENVI (r = 0,347; p < 0,001). In addition, WTP also significantly had a negative correlation with PC (r = -0,260; p < 0,001).

Table 4. Bivariat Pearson Correlations Between Factors

	AGE	GEN	EDU	MAR	INC	ENVI	FSC	PC	WTP
AGE	1,0								
GEN	0,112**	1,0							
EDU	0,316**	0,119**	1,0						
MAR	0,607**	0,200**	0,320**	1,0					
INC	0,314**	0,132**	0,307**	0,301**	1,0				
ENVI	0,224**	0,028	0,090*	0,143**	0,079	1,0			
FSC	0,128**	0,071	0,194**	0,085*	0,101*	0,348**	1,0		
PC	-0,017	0,023	-0,087*	-0,005	-0,169**	0,055	0,021	1,0	
WTP	0,012	0,141**	0,209**	-0,085*	0,109**	0,347**	0,300**	-0,260**	1,0

**p <0.01 ; *p < 0.05 (2-tailed).

The results of the binary logistic regression analysis can be seen in Table 5. Demographic variables, namely gender, education and marital status had a significant effect on consumers' WTP, but age and income had no effect. Woman had a 9,4 times higher probability than men in their willingness to pay certified organic vegetables at premium prices. Furthermore, consumers who graduated from higher education had WTP 2,8 times higher than those with low education. Respondents who were married had a 0,2 higher probability of WTP than those who were single.

In psychographic variables, ENVI, FSC, and PC had a significant effect on consumers' WTP. ENVI was the most significant predictor of WTP (Wald = 57.45). Respondent with high ENVI scores had twice the probability of WTP compared to those with low scores. Respondents with a high FSC were 1.39 times more likely to pay certified organic lettuce at a premium price. Furthermore, respondents with low PC scores will purchase certified organic lettuce with a 0.4 higher probability than respondents who are very concerned about price.

Table 5. Logistic Regression Estimation Coefficient (n = 575)

Variables	B	Exp(B)	S.E.	Wald	Sig.
AGE	0,009	1,009	0,293	0,001	0,975
GEN	2,242	9,408	0,455	24,315	0,000
EDU	1,030	2,800	0,215	23,035	0,000
MAR	-1,534	0,216	0,298	26,425	0,000
INC	0,136	1,146	0,135	1,016	0,313
ENVI	0,766	2,151	0,101	57,445	0,000
FSC	0,331	1,392	0,088	14,213	0,000
PC	-0,917	0,400	0,127	51,957	0,000
Constant	-15,181	0,000	2,439	38,758	0,000

Goodness-of-fit: -2Log-likelihood = 196.720; Nagelkerke R2 = 0.655; Hosmer and lemeshow test = 0.678

Discussion

Women are the main consumers of certified organic lettuce. Apart from being the decision makers for household food shopping, in general, women also have a higher love and concern for their families (Cairns & Johnston, 2015). Therefore, their WTP on the certified organic lettuce is higher than men. Organic certification is a government regulation to eliminate information asymmetry between producers and consumers about the quality of a food product. However, knowledge about this is sometimes not distributed to all levels of society in developing countries like Indonesia. Generally, people with access to higher education are more aware of the benefits of food certification. In line with that, consumers of organic vegetables in various developing countries are indeed dominated by the middle and upper income groups (Nguyen et al., 2019; Pacho, 2020; Wang et al., 2019). Practically, consumers who have a sufficient budget or more will tend to improve the quality of their consumption, especially food as a primary need.

Public awareness about environmental sustainability has a high influence on their purchases of agricultural products (Shah et al., 2021). Green consumers will consider credence attributes such as cultivation processes, environmental impacts, and contributions to sustainability. The higher the concern for the environment, then the higher the consumer's assessment of organic food products.

In developing countries such as Indonesia, public awareness of a healthy lifestyle is increasing, especially during the Covid-19 pandemic (Ulhaq et al., 2020). Public perception about the health benefits of organic vegetables is higher than non-organic, making the demand increase. Although several studies state that there is no difference in the higher nutritional content of organic and non-organic vegetables (Bernacchia et al., 2016; Menkovska et al., 2017; Ponder & Hallmann, 2020), but when the food consumed is not contaminated with chemical residues, the body responds better and causes health effects (Apaolaza et al., 2018). Consumers who are aware of Health and food safety have a higher preference for certified organic lettuce. As long as there is a credible guarantee of quality, they will choose it over conventional products.

Price is an attribute that is the main concern of consumers. The price of organic vegetables tends to be more premium than conventional vegetables. High prices are often reported as the main barrier for consumers to get organic vegetables (Coulibaly et al., 2011; Ha et al., 2019). In line with this statement, our findings show that consumers who always try to find the lowest price with various efforts are not the right segment for the marketing of organic vegetables. Therefore, the

process of branding and product differentiation is very important for marketers, so that consumers choose organic and conventional vegetables without hesitation, one of them is with certification.

The results of this study indicate that respondents have high enthusiasm for certified organic lettuce. Consumers often have the least information on the quality of a food product (Albersmeier, F., Schulze, H., & Spiller, 2010). When buyers cannot see directly the production process, they trust third parties as quality guarantors (claimers) in the form of official certification labels. Based on the results of this study, certified organic vegetable producers or marketers can build campaigns that promote femininity, a healthy lifestyle and environmental sustainability.

Conclusion

This study provides insight into consumers' valuations on the certified organic lettuce. The willingness of consumers to pay certified organic lettuce at a premium price is most dominantly influenced by the value of environmentalism. In addition, the food safety consciousness factor also has a significant influence. Consumers who are always looking for low prices (price consciousness) are not the right target for the marketing of certified organic lettuce. Organic producers or marketers need to target potential consumer segments, namely those with higher education in the upper middle class. Certification provides a significant added value to organic lettuce, producers or marketers need to build a strong brand by carrying an environmentally friendly message and Health benefits to consumers.

References

Albersmeier, F., Schulze, H., & Spiller, A. (2010). System Dynamics in Food Quality Certifications Development of an Audit Integrity System. International Journal on Food System Dynamics. https://doi.org/10.18461/ijfsd.v1i1.118

Apaolaza, V., Hartmann, P., D'Souza, C., & López, C. M. (2018). Eat organic–Feel good? The relationship between organic food consumption, health concern and subjective wellbeing. Food Quality and Preference, 63, 51–62.

Bernacchia, R., Preti, R., & Vinci, G. (2016). ORGANIC AND CONVENTIONAL FOODS: DIFFERENCES IN NUTRIENTS. Italian Journal of Food Science, 28(4).

Bhattarai, K. (2019). Consumers' willingness to pay for organic vegetables: Empirical evidence from Nepal. Economics and Sociology, 12(3), 132–146. https://doi.org/10.14254/2071-789X.2019/12-3/9

Cairns, K., & Johnston, J. (2015). Food and femininity. Bloomsbury Publishing.

Coulibaly, O., Nouhoheflin, T., Aitchedji, C. C., Cherry, A. J., & Adegbola, P. (2011). Consumers' perceptions and willingness to pay for organically grown vegetables. International Journal of Vegetable Science, 17(4), 349–362. https://doi.org/10.1080/19315260.2011.563276

David, W., & Ardiansyah. (2017). Organic agriculture in Indonesia: challenges and opportunities. Organic Agriculture, 7(3), 329–338. https://doi.org/10.1007/s13165-016-0160-8

De Carvalho, R. O., Weymar, L. C. N., Zanovello, C. B., Da Luz, M. L. G. S., Gadotti, G. I., Da Luz, C. A. S., & Gomes, M. C. (2015). Hydroponic lettuce production and minimally processed lettuce. Agricultural Engineering International: CIGR Journal, 2015, 290–293.

Engindeniz, S., & Tuzel, Y. (2006). Economic analysis of organic greenhouse lettuce production in Turkey. Scientia Agricola, 63(3), 285–290. https://doi.org/10.1590/S0103-90162006000300012

Ha, T. M., Shakur, S., & Pham Do, K. H. (2019). Rural-urban differences in willingness to pay for organic vegetables: Evidence from Vietnam. Appetite, 141(January), 104273. https://doi.org/10.1016/j.appet.2019.05.004

Islam, R., Solaiman, A. H. M., Kabir, M. H., Arefin, S. M. A., Azad, M. O. K., Siddiqee, M. H., Alsanius, B. W., & Naznin, M. T. (2021). Evaluation of Lettuce Growth, Yield, and Economic Viability

Grown Vertically on Unutilized Building Wall in Dhaka City. In Frontiers in Sustainable Cities (Vol. 3). https://doi.org/10.3389/frsc.2021.582431

Menkovska, M., Damjanovski, D., Levkov, V., Gjorgovska, N., Knezevic, D., Nikolova, N., & Stanoev, V. (2017). Content of B-glucan in cereals grown by organic and conventional farming. Banat's Journal of Biotechnology, 8(16).

Nguyen, H. V., Nguyen, N., Nguyen, B. K., Lobo, A., & Vu, P. A. (2019). Organic food purchases in an emerging market: The influence of consumers' personal factors and green marketing practices of food stores. International Journal of Environmental Research and Public Health, 16(6). https://doi.org/10.3390/ijerph16061037

Pacho, F. (2020). What influences consumers to purchase organic food in developing countries? British Food Journal, 122(12), 3695–3709. https://doi.org/10.1108/BFJ-01-2020-0075

Pituch, K. A., & Stevens, J. P. (2020). Binary Logistic Regression. Applied Multivariate Statistics for the Social Sciences, 454–490. https://doi.org/10.4324/9781315814919-16

Ponder, A., & Hallmann, E. (2020). The nutritional value and vitamin C content of different raspberry cultivars from organic and conventional production. Journal of Food Composition and Analysis, 87, 103429.

Rabelo, J. da S., Lima, P. V. P. S., Guimarães, M. de A., Tello, J. P. de J., Hendges, A. R. A. de A., Silva, B. do N., Neto, B. P. L., & Viana, C. dos S. (2018). Socio-economic Characteristics and Perception of the Lettuce Consumer. Journal of Agricultural Science, 10(12), 501. https://doi.org/10.5539/jas.v10n12p501

Rana, J., & Paul, J. (2017). Consumer behavior and purchase intention for organic food: A review and research agenda. Journal of Retailing and Consumer Services, 38(May), 157–165. https://doi.org/10.1016/j.jretconser.2017.06.004

Sarma, M., Nanere, M., & Trebilcock, P. (2020). Pricing strategies for organic vegetables based on Indonesian consumer willingness to pay. Management Science Letters, 10(14), 3253–3264. https://doi.org/10.5267/j.msl.2020.6.013

Shah, S. K., Zhongjun, T., Sattar, A., & XinHao, Z. (2021). Consumer's intention to purchase 5G: Do environmental awareness, environmental knowledge and health consciousness attitude matter? Technology in Society, 65(March), 101563. https://doi.org/10.1016/j.techsoc.2021.101563

Shatilov, M. V., Razin, A. F., & Ivanova, M. I. (2019). Analysis of the world lettuce market. IOP Conference Series: Earth and Environmental Science, 395(1). https://doi.org/10.1088/1755-1315/395/1/012053

Teng, C. C., & Wang, Y. M. (2015). Decisional factors driving organic food consumption: Generation of consumer purchase intentions. British Food Journal, 117(3), 1066–1081. https://doi.org/10.1108/BFJ-12-2013-0361

Ulhaq, Z. S., Kristanti, R. A., Hidayatullah, A. A., Rachma, L. N., Susanti, N., & Aulanni'am, A. (2020). Data on attitudes, religious perspectives, and practices towards COVID-19 among Indonesian residents: a quick online cross-sectional survey. Data in Brief, 32, 106277. https://doi.org/10.1016/j.dib.2020.106277

Vijayan, D., & Krishna, R. (2019). Determinants of Consumer Behaviour towards Organic Vegetables. 7(2), 29–34.

Wang, X., Pacho, F., Liu, J., & Kajungiro, R. (2019). Factors influencing organic food purchase intention in Tanzania and Kenya and the moderating role of knowledge. Sustainability (Switzerland), 11(1). https://doi.org/10.3390/su11010209

Yadav, R., & Pathak, G. S. (2016). Intention to purchase organic food among young consumers: Evidences from a developing nation. Appetite, 96, 122–128. https://doi.org/10.1016/j.appet.2015.09.017

Appendix1. Instrument Reliability and Validity

Items	Cronbach's Alpha	Pearson Correlation	Sig (2-Tailed)
Environmental care	0.703	0.714**	0.000
Social responsibility	0.685	0.747**	0.000
Recycling used goods	0.692	0.834**	0.000
Purchase eco-friendly products	0.685	0.666**	0.000
Purchase organic food	0.718	0.345*	0.014
Boycott of polluters	0.705	0.812**	0.000
Perception of chemical residues in food	0.693	0.791**	0.000
Concerns about synthetic BTP in food	0.697	0.795**	0.000
Concerns about vegetable safety	0.701	0.777**	0.000
Extra effort for cheaper price	0.682	0.678**	0.000
Shop around for the cheapest prices	0.679	0.884**	0.000
Comparing time to money	0.693	0.796**	0.000

Appendix 2. Confirmatory Factor Analysis

Factors	Component		
	1	2	3
Environmentalism			
Environmental care	**0.742**	0.022	0.093
Social responsibility	**0.430**	-0.006	0.440
Recycling used goods	**0.617**	0.112	0.074
Purchase eco-friendly products	**0.784**	-0.011	0.109
Purchase organic food	**0.535**	-0.084	0.134
Boycott of polluters	**0.564**	0.046	0.079
Food Safety Consciousness			
Perception of chemical residues in food	0.036	-0.008	**0.820**
Concerns about synthetic BTP in food	0.145	-0.049	**0.843**
Concerns about vegetable safety	0.200	0.088	**0.746**
Price Consciousness			
Extra effort for cheaper price	0.062	**0.851**	0.098
Shop around for the cheapest prices	-0.003	**0.902**	-0.060
Comparing time to money	0.009	**0.873**	-0.014