**Consumer’s Willingness To Pay For Organic Leaf Vegetables In Modern Markets In Bogor**

**Nastiti Wardania\*, Dwi Rachmina\*\*, Yusalina\*\***

\*Agribusiness Science Master Students \*\*Lecturer of Agribusiness Science Study Program, Faculty of Economics and Management, IPB University

\*email: 396wardania@apps.ipb.ac.id

**Abstract**

The change in consumption patterns of inorganic to organic vegetable products implies that consumer demand for organic leaf vegetable products has increased. Organic leaf vegetables are included in the top ten products that are often purchased by consumers compared to several other organic products. This suggests a potential market because when people search, they are indicated to need the product. Therefore, it is important to examine consumers' Willingness to Pay (WTP) for organic leaf vegetables to determine how much consumers are willing to pay. The method used in this research is Willingness to Pay (WTP) with the Discrete Choice Experiment (DCE) method and Contingent Valuation Method (CVM). The results of this study show that consumers are willing to pay more for organic products at Rp 1.17 / gram, have attributes/labels listed at Rp 0.85 / gram, and availability of organic vegetable products sold online at Rp 0.89 / gram. The results of the calculation of the average WTP for green spinach commodities are IDR 8,276; red spinach IDR 10,505.5; kale IDR 9,237; pakcoy IDR 9,283; and curly lettuce IDR 10,917 in a 200-gram package size.

**Keywords:** Organic Vegetables; WTP; DCE; CVM

**Abstrak**

Perubahan pola konsumsi produk sayuran anorganik ke organik yang implikasinya yakni permintaan konsumen terhadap produk sayuran daun organik terjadi peningkatan. Sayuran daun organik termasuk kedalam sepuluh produk tertinggi yang sering dibeli oleh konsumen dibandingkan beberapa produk organik lainnya. Hal ini mengisyaratkan adanya potensi pasar karena ketika orang melakukan pencarian terindikasi membutuhkan produk tersebut. Oleh karena itu, penting untuk meneliti Willingness to Pay (WTP) konsumen terhadap sayuran daun organik untuk mengetahui seberapa besar kesediaan konsumen untuk membayar. Metode yang digunakan dalam penelitian ini Willingness to Pay (WTP) dengan metode Discrete Choice Experiment (DCE) dan *Contingent Valuation Method* (CVM). Hasil penelitian ini yaitu konsumen bersedia membayar lebih tinggi untuk produk organik sebesar Rp 1,17/gram, memiliki atribut/tercantum label sebesar Rp 0.85/gram, tersedianya produk sayur organik yang dijual secara online sebesar Rp 0.89/gram. Hasil perhitungan rataan WTP komoditas bayam hijau Rp 8.276; bayam merah Rp 10.505,5; kale Rp 9.237; pakcoy Rp 9.283; dan selada keriting Rp 10.917 dalam ukuran kemasan 200 gram.

**Kata kunci:** Sayur Organik; WTP; DCE; CVM

**INTRODUCTION**

The development of organic agriculture in Indonesia can be seen from the growth rate of organic food which reaches 15-20% every year (SPOI 2020). Currently, there are various changes in terms of consumers, both in terms of types of food, ways of eating, eating patterns, and technology used in processing food. Changes in consumption patterns of inorganic to organic vegetable products imply that consumer demand for organic leaf vegetable products is also increasing. Organic leaf vegetables are included in the top ten products that are often purchased by consumers compared to several other organic products.

The results of a survey conducted by Statistik Pertanian Organik Indonesia (SPOI) show that organic consumers are dominated by consumers who live in urban areas. The domicile of respondents surveyed was spread across 10 provinces including DKI Jakarta 32%, West Java 21%, Special Region of Yogyakarta 11% and the remaining spread in Central Java, East Java, Banten, West Sumatra, South Sulawesi, North Sumatra, West Kalimantan (SPOI 2020). West Java Province is the province with the largest population in Indonesia, which is 48,274,200 people in 2020 or 17.87% of the total population of Indonesia (BPS 2023). West Java is the province with the highest percentage of consumers of organic products, namely 27.06% during the Covid-19 pandemic (SPOI 2020). Based on this, this research will be conducted in Bogor City. This is due to its strategic location and proximity to DKI Jakarta. Organic leaf vegetable producers in Bogor City include Agatho Farm, agribusiness technopark, Empat Serangkai Farm, Bogor Organic House, Simply Fresh, Ayudia Farm and Permata Hati Organic Farm. The ease of purchasing organic leafy vegetables is not an obstacle due to modern markets such as Farmer Market, All Fresh, Yogya Bogor Junction, and Agrimart.

Data from the Ubersugget website shows that organic leafy greens are searched for on average (on Google) 1,600 times per month. This suggests that there is market potential because when people search, they indicate that they need the product. Data from the Ubersugget website shows that there was a high increase in demand for organic products (rice and vegetables) in March 2020 - May 2020, when compared to the period March 2019 - January 2020. This increase is believed to be due to the Covid 19 pandemic in Indonesia. The Covid 19 pandemic has increased the awareness of the Indonesian people to consume more organic food to improve health immunity (SPOI 2020).Consumer decisions in purchasing organic food products are influenced by the premium price and this is the main obstacle (Bryła 2016). This is because organic food products have a higher price. Price barriers refer to consumer perceptions of the price of organic food and the ability and willingness of consumers to buy these products. Consumers who do not consume organic products for various reasons such as the high price of organic products, and limited organic production so that consumers have difficulty obtaining them (SPOI 2020).

The survey results showed that 82% of consumers stated that high prices were the reason for not buying organic products. The majority of consumers are not willing to pay a premium price above 10-20% for organic food (Xie et al. 2015). The price range of organic products ranges from 6% to almost 300% higher than the price of inorganic products (Sörqvist et al. 2013). The price difference between organic and inorganic leafy vegetables also appeared in modern markets in Bogor City during the pre-research. The availability of organic leafy vegetables cannot be found every day except in supermarkets or specialty stores. Market centers that are a means or place for people to purchase organic leaf vegetables are in modern markets. Farmer Market, All Fresh, Yogya Bogor Junction, and Agrimart are modern markets located in Bogor City.

In modern markets, organic leafy vegetables are displayed with attractive displays and stored on refrigerated shelves that can be adjusted at any time. The purpose of this is to maintain their quality so that they remain fresh and can be stored for a longer period. The freshness and quality of these vegetables are important attributes and are considered by consumers when buying. These facilities or treatments cause the price of the product to be more expensive.

A person's personality is the main driver for buying organic food such as the connection to environmental issues, lifestyle health issues, product quality, and subjective norms (Basha et al. 2015). More broadly, the factors that influence consumer attitudes towards organic food products are due to several factors, namely awareness of health and welfare expectations, food quality and safety, concern for environmental sustainability and ethical consumerism, willingness to pay for the value of the product received (willingness to pay), price and certification, trends and lifestyles, and social awareness (Rana and Paul 2017). The price difference can affect consumers' willingness to pay. Based on this, it is necessary to conduct research related to how much the value of willingness to pay is to be paid by the public, especially in the Bogor area to pay for organic leaf vegetable products.

**METHODS**

The research was conducted in Bogor City and the location selection was done purposively (purposive sampling). To obtain an overview of the WTP of organic leaf vegetables, this study was limited to consumers in Bogor City. Bogor City was chosen because Bogor as a buffer zone of the capital city, consists of people who have the level of education, employment, and social status that has the potential to become consumers of organic products. In addition, the availability of organic products in Bogor City is also very adequate with the existence of modern vegetable outlets developing in Bogor. The availability of organic products in Bogor is not an obstacle for consumers to get products. The existence of several organic leaf vegetable producers implies that the availability of organic leaf vegetable products can be fulfilled. So the price factor and the willingness to pay consumers are important factors that need to be studied. Data collection time will be carried out in March-May 2024.

The recommended population sampling in DCE research follows the equation (Johnson and Orme 2003). Where n is the minimum number of respondents, t is the number of choice sets, a is the number of profiles per choice set, and c is the number of attributes. The sampling is adjusted to the arrangement of choice sets with a combination of 8 choice sets, 2 profiles per choice set, and 4 attributes. Thus, the minimum number of samples that can be minimally taken in the study is as follows:

$$\begin{matrix}n&\geq &\frac{500 (4)}{8 x 2}\end{matrix}$$

$$\begin{matrix}n&\geq &125\end{matrix}$$

The number of samples used in the study was at least 125 respondents. Respondents selected in the study were based on the following criteria:

1. A respondent is someone who has made at least one purchase. This criterion was chosen because of the assumption that if you buy at least once, you can already have an assessment of the product.
2. Respondents were selected as consumers or as purchasing decision-makers.
3. Respondents aged 18 years and over, because at this age they are considered to be able to make choices.
4. For one family group, only one person is a respondent in the study so that the answers in the questionnaire do not influence each other.

The analysis method used to answer the first objective is to determine the WTP value of organic leaf vegetable products. To find out this, an analysis using the Discrete Choice Experiment (DCE) method is used. The alternative design in this case is a collection of independent variables that represent individual actions to be selected by respondents using a choice set of alternative designs containing two or more alternatives. Based on the stages of research suggested by WHO, this research was carried out in several stages:

1. Identifying attributes and setting levels

Based on the literature study, this research will use 4 attributes with 2 attribute levels. The price attribute is adjusted at the time of data collection from Maret-Mei 2024. Selection of DCE analysis to find the WTP value chosen by respondents as consumers of organic leaf vegetables.

1. Conducting experimental design and choice set preparation

The arrangement of the experimental design in this study uses an orthogonal design using SPSS so that a combination of attributes consisting of eight choice sets with two profiles is formed. The choices formed will make it easier for respondents to select a combination of attributes. The third option in each choice set is an option when consumers do not choose the two profile combinations offered.

WTP assessment also uses CVM. According to Yolinda and Pharmawati (2019), Contingent Valuation Method or CVM is a method with survey techniques carried out by asking respondents questions about the value they can give to goods or services. The CVM method used by WTP is based on the respondent's willingness to pay. According to Budi Setyawan et al. (2020). Contingent Valuation Method is an approach to estimate the value given by a person to goods or services. CVM can be calculated through the following steps:

1. Building a hypothetical market
2. Obtaining the value of WTP offers (Obtaining Bids)
3. Estimating the WTP Curve
4. Determining Total WTP
5. Aggregating

**RESULT AND DISCUSSION**

The results of the analysis show how much consumers are willing to pay for organic vegetables with predetermined organic vegetable attributes. Based on the WTP analysis that has been carried out, it is known that consumers are willing to pay more for the attributes of organic vegetables, there is an organic label, available directly (modern markets) and online (applications). In organic vegetable products, consumers are willing to pay a maximum price of Rp 1.17/gram higher than inorganic vegetable products. Organic vegetable products have higher nutritional benefits/content believed to have better quality so respondents are willing to pay more. In the research of Barański, M., et al. (2014) also explained that organic vegetables have a higher nutritional content than inorganic vegetables. For example, organic vegetables tend to have higher levels of vitamin C, iron, and magnesium. However, these differences are often inconsistent and can be influenced by other factors such as soil type, climate, and processing methods. Consumer considerations are also influenced by differences in pesticide residues as explained by Syfullah, et al. (2021) that in many cases, pesticide residues on organic produce are almost undetectable, while inorganic vegetables often contain pesticide residues, although usually within safe limits.

**Table 1.** Willingness to pay consumers on each attribute oforganic leaf vegetables

|  |  |  |
| --- | --- | --- |
| Attribute | Level | WTP (Rp/gram) |
| Product types | Organic | 1.17816 |
|  | Anorganic | -0.65549 |
| Tagged with | Include organic label | 0.85856 |
|  | No organic label | -0.12322 |
| Place | In modern markets directly | 0.12801 |
|  | Onlive via the app | 0.59849 |

Description: Data Processed (2024)

Organic vegetables that have a label result in consumers' willingness to pay Rp 0.85/gram higher for organic vegetable products compared to those without a label. The organic label on organic vegetables is very important because it assures consumers that the product has met certain standards in the production process. The research of Katt, F., & Meixner, O. (2020), it is explained that consumers tend to be willing to pay more for products with attributes that are believed to provide environmental and health benefits. The presence of labels on organic vegetables also shows that vegetables have good quality. The organic label indicates that the product has gone through an environmentally friendly and sustainable production process, including the use of natural fertilizers and non-chemical pest control methods.( Willer, H., and Lernoud, J, 2020).

The availability of organic vegetable products sold online encourages consumers to be willing to pay Rp 0.59/gram higher than purchasing in modern markets directly. Organic vegetables marketed online make it easier for consumers to choose, determine distance, and payment costs, and also find out information related to complete vegetable choices. The research of Michael A. Wozniak and Elena Pisani (2017) and Jessica Crowley and Louise C. M. Davidson (2020) also explained that consumers prefer online purchases because of the ease of access, greater choice, and more complete product information. Consumers who buy organic products online are also influenced by product reviews and ratings presented in online markets. Vegetables that are available and sold directly (traditional markets) are usually stacked openly, the quality is mixed, and it is not uncommon for vegetables to be located close to the road. Thus consumers are willing to pay more when vegetables are sold online than when sold directly. The value of consumers' willingness to pay using CVM analysis consists of six steps of analysis stages, namely:

1. Building a hypothetical market

In the process, researchers determine and provide information related to organic vegetable commodities. Furthermore, respondents determine the price they are willing to pay from the prevailing organic vegetable prices, namely green spinach IDR 7,000, red spinach IDR 9,000, kale IDR 8,700, pakcoy IDR 8,000, and curly lettuce IDR 9,950. This is done so that consumers have an overview of the hypothetical market situation so that they can determine the amount of money to be paid. At this stage, consumers as respondents can determine the price amount as desired without being given a price option by the researcher.

1. Obtaining WTP bid values (Obtaining Bids)

The amount of the respondent's WTP value is obtained using the bidding game method, carried out by asking respondents whether they are willing to pay a certain amount of money proposed as a starting point. If “yes”, then the amount of money is increased to the agreed level.

1. Estimating the WTP Curve

The WTP curve explains the frequency of respondents to each increase in the respondent's WTP price. The WTP curve is formed based on the cumulative number of respondents who choose a certain WTP value. The assumption used is that if individuals are willing to pay a certain value, the number will decrease in line with the increase in WTP value. The WTP curve has a negative slope if the higher the WTP value, the less people are willing to pay and vice versa.

**Figure 1.** WTP Curve

1. Determining Total WTP

The total WTP value is the result of multiplying the average WTP of respondents by the total consumer population in the modern market in Bogor City. The total WTP value for each organic leaf vegetable commodity is presented in table 2.

**Table 2.** The Total WTP

|  |  |  |
| --- | --- | --- |
| No | Commodities | Total WTP (Rp) |
| 1 | Green Spinach | 1,655,200 |
| 2 | Red Spinach | 2,101,100 |
| 3 | Kale | 1,847,400 |
| 4 | Pakcoy | 1,856,600 |
| 5 | Curly Lettuce | 2,183,400 |

1. Agregating Data

Aggregation of WTP data is a process by which the sample mean value is converted to the total population mean value. The aggregated WTP value obtained in this case serves to see the financial potential that can be generated. The method used is the multiplication of the WTP value multiplied by the total population. The aggregated value of WTP needs to be known so that marketers get information about the value of sales with the maximum value that consumers are willing to pay from the sale of each type of vegetable. The aggregate value of WTP for each organic leaf vegetable commodity is presented in Table 3.

**Table 3.** WTP Aggregate Value

|  |  |  |
| --- | --- | --- |
| No | Commodities | Agregat WTP (Rp) |
| 1 | Green Spinach |  110,346.67  |
| 2 | Red Spinach |  123,594.12  |
| 3 | Kale |  92,370.00  |
| 4 | Pakcoy |  92,830.00  |
| 5 | Curly Lettuce |  94,930.43  |

**CONCLUSION**

The results of this study show that consumers are willing to pay more for organic products at Rp 1.17 / gram, have attributes/labels listed at Rp 0.85 / gram, and availability of organic vegetable products sold online at Rp 0.89 / gram. The results of the calculation of the average WTP for green spinach commodities are IDR 8,276; red spinach IDR 10,505.5; kale IDR 9,237; pakcoy IDR 9,283; and curly lettuce IDR 10,917 in a 200-gram package size. Based on the results of the study, suggestions for marketers are to set standards for the quality of organic vegetables, and there is a need to increase awareness and awareness to understand the benefits of organic vegetables so that they can be consumed by all people from those with low to highest education and income.

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