# Consumer's Perception and Opinion Toward Organic Rice Products

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Abstract. The purpose of this study was to assess the perceptions and opinions of Semarang city consumers towards organic rice products in the framework of supporting the security program for the provision of healthy food. The study used a quantitative approach with a sample of 136 organic rice consumers. The variables studied include consumer characteristics, consumer perceptions, consumer considerations, consumer interests, consumer confidence, and consumer attitudes in consuming organic rice. Data were analyzed by descriptive percentage and the Multidimensional Scale method. The results showed that 52.94% of men and 47.06% of women in the age range between 19 to 61 years and 52.94% with a diploma/bachelor degree stated that organic rice products were healthy (46%), did not contain pesticides (35%), friendly environment (15%) and the rest for the welfare of farmers. The important attributes that are considered by respondents in buying organic rice products include elasticity, quality, certification, price, and the ease of obtaining them. The information label attribute is an attribute that is considered very important in shaping consumer attitudes towards organic rice products. While the highest level of consumer confidence lies in the quality attribute. In general, organic rice products can be accepted by consumers where in general the attributes they have are as expected. This research implies that the government should expand the planting area, assist in product certification, improve the packaging with information on nutritional content and guarantee that it is free of harmful chemicals, and promote through the advantages and benefits of organic rice.

Keywords: Perception, Opinion, Consumer, Organic Rice

### 1 Introduction

Rice is a very important commodity because more than 90% of Indonesian people consume rice. Organic rice is rice produced through an organic production process based on certain standards and has been certified by an independent body. Certification of organic products produced, storage, processing, post-harvest, and marketing must comply with the standards set by Badan Standarisasi Nasional [1]. Paying attention to the safety of staple foods is very important. Health and food safety are also a top priority. This has resulted in the consumer community starting to switch to rice from organic agricultural products

The city of Semarang has a program for developing organic rice farming land in Mijen District, Gunungpati District, and Ngaliyan District. The farmer groups involved in the development of the organic rice fields include the Sumber Rejeki Farmer's Group and the Lumintu Farmer's Group with a total of 20 members. The area of organic rice farming managed by Sumber Rejeki Farmers Group is 4.44 ha and Lumintu Farmers Group is 6.28 ha.

The development of organic rice fields is pursued through the cultivation of Baroma, Mentik Susu, INPARI 33 varieties, black rice, and brown rice. The productivity of organic farming lands on average ranges from 6-7 tons per hectare, the yield is lower when compared to conventional farming systems [2].

The main problems faced by organic rice farmers in Semarang City consist of the first is the aspect of quality management, where farmers still use chemicals that are not allowed in organic farming activities according to SNI 6729, 2016. This makes it difficult for farmers to obtain organic certification. The second is the marketing aspect, where at the selling price is IDR 16,000 - 18,000 per kg is considered too high by consumers, but, at this price level, the profit margin taken by farmers is very small.

Based on the problems mentioned above, research on the assessment of consumer perceptions and attitudes towards organic rice products is needed to see the strengths and weaknesses of the market. The organic rice expansion program is needed to support the security program for the provision of healthy and nutritious food.

#### 2 Literature Review

Organic farming is a reflection of the Green Economy model. The agricultural system developed in response to land degradation, food security issues that harm human health and economic factors. However, it is not easy to develop organic agriculture as an alternative because it developed together with the green revolution policy that remodeled indigenous agriculture into an agricultural political-economic system that was integrated with the state and market, which controlled dominantly all instruments from the local to the national level and even linked it with global agricultural system [3].

The results of the "Go Organic 2010" evaluation research still found a tendency where organic farming was only interpreted by the acquisition of labels, logos, and stamps [4]. The results of research on the suitability of the organic farming system applied by the Mekar Tani Jaya Farmers Group with SNI 6729: 2016, it is known that the percentage of conformity is only 94 percent (%) because not all organic farming systems can be applied so that it has an impact on other aspects [5]. Common problems faced by organic farmers are product quality variations, price fluctuations between farmer groups, and organic seeds that are difficult to obtain [6].

The success of implementing organic farming policies is also influenced by the internal factors of the farmers themselves and the assistance of the instructor, including the factors of age, education level, income, experience, and visits by the instructor which have a significant effect on farmers' perceptions and adaptation [7][8]. Furthermore, the successful development of organic agriculture will be realized when there is support from the government in the form of training, production capital, and regulations at each level of the Regional Government [9].

Many previous studies related to organic rice farming systems have been carried out. Such as research on the application of organic agriculture to the Mekar Tani Jaya Farmers Group, Bandung Regency, which examines the implementation of SNI 6729:2016 and the obstacles faced by farmers [10]. Furthermore, research on the difference between organic and conventional farming in Bantul Regency examines the feasibility of farming [2]. Whereas in the development of organic rice farming systems it must be viewed holistically starting from increasing the capacity of human resources and cultivation techniques that affect productivity

[11][12], product marketing and consumer perceptions [13], as well as anticipate and develop the determinant factors related to the sustainability of organic rice farming [14].

The sustainability of organic farming requires the support of not only farmers as business actors, but also stakeholders and consumer preferences. Preference is part of the decision-making component of an individual. These components include, among others, perceptions, attitudes, and values. These components influence each other in making decisions. Preference is defined as subjective (individual) taste. Perception is the experience of objects, events, or relationships obtained by storing information and interpreting messages. The meaning of information does not only involve sensation, but also attention, expectations, motivation, and memory. Meanwhile, the attitude is a tendency to act or react to stimuli. Therefore, attitudes cannot be directly seen but must be interpreted first as behavior that is still closed.

### 3 Method

The focus of this research is to find out how the perceptions and attitudes of the people of Semarang City towards organic rice products. The research uses a quantitative approach. The selection of respondents was taken purposively with a total of 136 consumers of organic rice in the city of Semarang.

The variables studied include consumer characteristics, consumer perceptions, consumer considerations, consumer interests, consumer confidence, and consumer attitudes in consuming organic rice. Data were collected through interview and questionnaire techniques. The data were analyzed by descriptive percentage and Fishbein attitude model. According to Angel et al. [15], Fishbein's multi-attribute analysis gives results in the form of a picture of consumer preferences in the form of attitudes, perceptions, and positive or negative assessments of a product.

Fishbein's attitude model can explain two types of attitudes based on attitude objects, namely attitudes toward objects and attitudes toward behavior. The Fishbein Multi-attribute Model formula is as follows:

$$A^{\circ} = \sum_{i=1}^{n} bi$$
. ei

Note:

Ao = Attitude towards organic rice

bi = The strength of consumer confidence in the "i" attribute ei = Evaluation of consumers (interests) in the "i" attribute n = The number of attributes possessed by organic rice products

i = Attribute or feature

Fishbein's analysis includes an evaluation of the important component (ei) and a trust component (bi).

Table 1. Types and Specifications of Tested Organic Rice Products

Question Section	Answer Form	Level
Factors that respondents consider consuming organic rice products	Multiple choice	-

Question Section	Answer Form	Level
Evaluation of consumer interest (ei) on the attributes of "Berlian" organic rice	Scale (linkert)	1 = very unimportant 5 = very important
Evaluation of consumer confidence (bi) on the attributes of organic rice products	Scale (linkert)	1 = very bad 5 = very good

The variable ei describes the evaluation of the attributes of organic rice products measured using a five evaluation scale, namely from very important to very unimportant. The variable bi indicates how strongly consumers believe that the researched organic rice diversification product has the attributes proposed in the questionnaire. The measurement scale bi is also the same as ei with a confidence scale of five. Variable Ao shows the assessment of respondents' attitudes towards the attributes of organic rice products which is the result of multiplying each belief strength score with the attribute evaluation score.

Furthermore, based on class calculations, the score for the level of importance and level of confidence is obtained as follows.

- a) 1.00 1.80 = Very Unimportant
- b) 1.81 2.60 = Not important
- c) 2.61 3.40 = Ordinary
- d) 3.41 4.20 = Important
- e) 4.21 5.00 = Very Important

After knowing the interests and beliefs, then the attitude value (Ao) is obtained which is the multiplication between the level of interest and the level of trust [16]. So that the class division based on the attitude value (Ao) is:

- a) 1.00 5.80 = Very negative
- b) 5.81 10.6 =Negative
- c) 10.7 15.4 = Neutral
- d) 15.5 20.2 = Positive
- e) 20.3 25 = Very Positive

As for the overall attitude value or total attitude value (Ao total) based on 7 (seven) attributes, it is divided into the following classes.

- a) 7 40.60= Very negative
- b) 40.61-74.20 = Negative
- c) 74.21-107.80 = Neutral
- d) 107.81-141.40 = Positive
- e) 141.41 175 = Very Positive

The Importance Performance Analysis (IPA) method is also used to analyze consumer satisfaction with organic rice products. This method explains the relationship between the level of consumer interest in organic rice products with the level of performance attributes of organic rice which results in the value of conformity to consumer expectations. Analysis with this IPA method maps attributes into four quadrants, namely (I) Main Priority Quadrant, (II) Maintain Achievement Quadrant, (III) Low Priority Quadrant, and (IV) Excessive Quadrant. The mapping is based on the average score of the level of importance and the average score of the performance level of each of the attributes studied. The formula used is as follows.  $Tki = \frac{Xi}{Yi} \times 100\%$ 

$$Tki = \frac{Xi}{Vi} \times 100\%$$

Note:

Tki : Consumer suitability Xi : Performance level score

Yi : Importance score

### 4 Result and Discussion

Characteristics of respondents identified by gender, age, education level, and occupation (demography) are depicted in Table 2.

<b>Table 2.</b> Characteristics of Respondents (N=136)			
Characteristics of respondents		Number of Respondents	Percentage (%)
Gender	Male	72	52.94
	Female	64	47.06
Age	19-26	27	19.85
	27-34	12	8.82
	35-42	42	30.88
	43-50	24	17.65
	51-58	24	17.65
	> 59	7	5.15
Education level	No school/ not graduate school	1	0.74
	Primary school	1	0.74
	Junior High School	8	5.88
	Senior High School	28	20.59
	Diploma/Bachelor	72	52.94
	Master/Doctor	26	19.12

Table 2. Characteristics of Respondents (N=136

## 4.1 Respondents' Perception of Organic Rice Products

From 136 respondents, it is known that 46% have the perception that organic rice can be healthy for the body. Furthermore, 35% stated that organic rice does not contain pesticides and as many as 15% of respondents said that organic rice supports the environmentally friendly movement. Meanwhile, only 4% of respondents associate organic rice products with farmers' welfare. Based on the data above, it is known that the awareness of respondents' perceptions of organic rice is more likely to be related to health and food safety aspects. Fig. 1. presents the distribution of respondents' perceptions of the presented organic rice products.

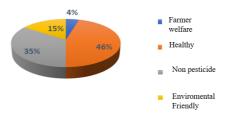


Fig 1. Respondents' Perceptions of Organic Rice Products

Fig. 1 has shown that a healthy lifestyle has become a trend in life because all products produced are guaranteed safe for consumption (food safety attributes), high nutritional content (nutritional attributes), and environmentally friendly (eco-labeling attributes). The global sales

of organic food and beverage products increased by 9.2%, from US\$ 54.1 billion to US\$ 59.1 billion during 2009–2010 [17]. The motive for buying organic food is not only motivated by health awareness but also environmental sustainability [18].

### 4.2 Consumer Considerations in Consuming Organic Rice Products

Research data shows that consumer motivation in consuming organic rice products includes: a) competitive price, b) hygiene, c) nutritional content, d) desire to try, and e) fluffiness. The nutritional content factor is also the motivation that many consumers choose to consume organic rice products. In consuming organic rice products, consumers also consider the tenacity of rice when consumed.

The important attributes that are considered by respondents in buying organic rice products include a) price, b) organic label certification, c) ease of obtaining, d) fluffiness, taste and durability, and e) quality. The taste attribute is the most common consideration chosen by consumers. Meanwhile, in buying organic rice products, consumers also make the attribute of fluffiness the most commonly chosen consideration. In addition, consumers also include rice quality attributes and the existence of organic certification labels as considerations. Organic rice has a more fragrant aroma and lasts longer, this is the characteristic that distinguishes organic and inorganic rice [19].

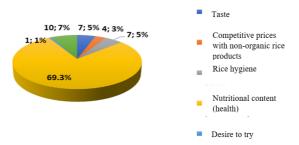


Fig 2. Consumer Motivation in Consuming Organic Rice Products

Consumer preference for organic rice is negatively affected by income and positively influenced by the respondent's education level, price of organic rice, and the number of family members. Meanwhile, consumption of organic rice is negatively affected by the respondent's age, education level, and positively influenced by the number of family members, price of organic rice, price of non-organic rice, and type of occupation of the head of the family.

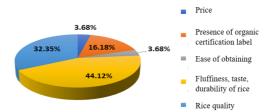


Fig 3. Attributes That are Considered by Consumers in Consuming Organic Rice product

# 4.3 Consumer Interests (ei) Towards Organic Rice Products

Fig. 4 shows the results of the evaluation of consumer interests in sensory attributes, packaging, and prices on organic rice products that are the object of research. All attributes scored high and were included in the "very important" category in organic rice products. The attributes with the highest importance are in the information label (4.80), ease of obtaining (4.55), packaging (4.55), affordability (4.54), durability (4.50), fluffiness (4.40), and variety (4.34). The greater the average score ei describes the importance of these attributes for consumers.

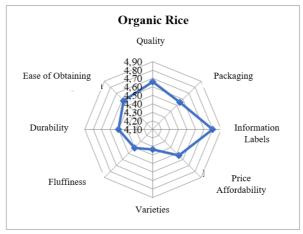


Fig 4. Distribution of Attribute Strengths Based on Consumer Interest Evaluation Scores on Each Attribute of Organic Rice

### 4.4 Consumer Confidence Assessment (bi)

Consumer confidence in organic rice has an average rating score of (4.44) or in the very good category. The greater the average score of consumer confidence shows consumer confidence in the attributes possessed by the product. The attribute of durability and quality obtained the highest score (4.53) followed by a score (4.46) which was the variety and the attribute of ease of obtaining the lowest average score of (4.35). The greater the bi score indicates the level of consumer confidence for these attributes on all product attributes.

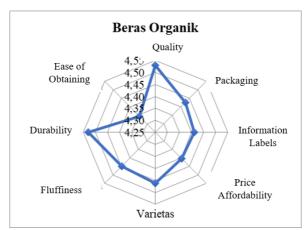


Fig 5. Distribution of Attribute Strengths Based on Consumer Confidence Scores on Organic Rice
Products

### 4.5 Consumer Attitude Analysis

Consumer Attitude Analysis (Ao) towards organic rice products obtained a total score of 141.76 or in the "Very Positive" category. The positive attitude of consumers shows that the product can be accepted by consumers where in general the attributes possessed are following what is expected.

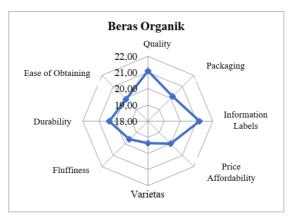


Fig 6. Distribution of Consumer Opinion Towards Attributes on Organic Rice Product

Based on Fig. 6, it is noted that the information label attribute obtained the highest score with a value (21.18). When comparing all attributes of organic rice products, 3 attributes get very positive attitudes from consumers (>20.3) namely quality (21.12), information labels (21.18), and packaging (20.38), while the rest get positive attitudes (15.5-20.2). This means that according to the attributes possessed by all product variants, it can be accepted by consumers.

The opinion or level of awareness of consumers of labeled organic rice about the dangers of residual chemical content in rice on health is high because of consumer awareness about healthy food so that consuming organic rice is expected to provide health benefits because it

reduces chemical residues. Likewise with consumer motives, namely health (67.50%) because consumers know and realize the importance of consuming healthy food products. In terms of rice fluffiness, most consumers like very fluffy rice (65.00%) [20].

The results of the Kendall's tau-b correlation test to determine the relationship between consumer attitudes based on the characteristics (gender, age, and occupation) of respondents indicate that the age group and education level qualitatively have a relationship with consumer attitudes towards organic rice products. While the relationship between consumer attitudes and gender there is no significant relationship (p > 0.05).

**Table 3.** Kendall's tau-b Correlation Test, The Relationship Between Consumer Opinion Towards the Characteristics of Respondents

			Gender	Age	Level of education
Kendall's tau_b	Ao	Correlation Coefficient	.078	.128*	145*
		Sig. (2-tailed)	.275	.045	.030
		N	136	136	136

<sup>\*.</sup> Correlation is significant at the 0.05 level (2-tailed)

### 4.6 Importance Performance Analysis

Based on the results of data processing, it is known that the average total score for the performance score on the interests of consumers of organic rice products is 4.55 and the average score of consumer expectations (trust) is 4.44. Where the value between performance and consumer expectations is appropriate.

Table 4. Average Performance Scores, Expectations, Suitability Level, and Hold-Action

Attribute	Interest Evaluation (ei)	Trust Evaluation (bi)	Conformity Level (Tki)	Definition
Quality	4.66	4.53	97.16	Not Suitable
Packaging	4.55	4.43	97.25	Not Suitable
Information Labels	4.80	4.41	91.88	Not Suitable
Price Affordability	4.54	4.40	97.08	Not Suitable
Varieties	4.34	4.46	102.88	Suitable
Fluffiness	4.40	4.45	101.00	Suitable
Durability	4.50	4.53	100.65	Suitable
Ease of Obtaining	4.58	4.35	98.46	Not Suitable
	4.55	4.44	97.85	

The value of each average of importance and performance is in Table 4, which is then drawn on a Cartesian diagram. The purpose of using a Cartesian diagram is to see in more detail the attributes that need to be improved. By using the SPSS 23 program, the IPA diagram maps product attributes into the four existing quadrants.

After calculating using a Cartesian diagram, the results of the attributes that must be improved are obtained. In quadrant I (main priority) it is assessed that the performance of the attributes is lower than expected by consumers, so it is necessary to improve the attributes to increase customer satisfaction. There are 3 (three) attributes that are included in quadrant I, which are as table 5.

**Table 5.** Results of Cartesian Diagram Calculations in Quadrant I (Main Priority)

	Table 5. Results of Cartesian Diagram Caretiations in Quadrant 1 (Main 1 Hority)		
No	Attribute	Consumer testimonials	
A3	Information Labels	Provide complete product information, in the form of expiration	
		date and production date	
A8	Ease of obtaining	There needs to be promotions and information on sales to make it easier for consumers to get good quality organic rice products; Create a special Berlian social media for marketing; take advantage of resellers	
A2	Packaging	The packaging is often "deflated" or leaky, not durable; beautified vacuum packaging	

The attributes that must be maintained after the calculations using the Cartesian diagram are the attributes that are in quadrant II (maintain achievement) because they have been able to fulfill what they want. There is 1 (one) attribute that is included in quadrant II.

 Table 6. Results of Cartesian Diagram Calculations in Quadrant II (Maintain Achievement)

No	Attribute	Consumer testimonials
A1	Product quality	The quality is good, maybe the grinding quality can be improved

In quadrant III (low priority) some attributes are less important in influencing consumers to consume the product and its performance is also normal. This means that this attribute is considered less important for consumers and its performance is also not good or not satisfactory. There are 2 (two) attributes that are included in quadrant III.

Table 7. Results of Cartesian Diagram Calculations in Quadrant III (low priority)

	Tuble 7. Results of	Cartesian Biagram Carcalations in Quadrant in (1011 priority)		
No	Attribute	Consumer testimonials		
A4	Price affordability	Affordable prices, yes, with organic quality; still too expensive		
A6	Fluffiness	The fluffiness of the rice is very good, but it may be listed on the packaging so that consumers know the level of fluuffiness		

In quadrant IV (excessive) some attributes are less important according to consumers, but the implementation of attribute performance is very excessive. So in other words, consumer expectations for this attribute are low, but the performance is very high (this attribute is considered excessive). There are 2 (two) attributes that are included in quadrant IV.

Table 8. Cartesian Diagram Calculation Results in Quadrant IV (excessive)

No Attribute	Consumer testimonials
A5 Varieties	Maybe more variety, at an affordable price
A7 Durability	The durability of rice can last 2 years if the packaging does not leak, whereas if it has been cooked into rice, the durability of rice is longer than ordinary (conventional) rice.

Consumer expectations play an important role and a very big influence in determining the quality of products (goods and services). Consumers will use their expectations as a standard or reference as to what and how their needs are. Consumer satisfaction is a large expectation

value so that consumers feel their needs are fulfilled. Achievement of satisfaction has an impact on increasing sales. A high level of consumer satisfaction can increase sales volume [21].

### 5 Conclusion

The results showed that consumers stated that organic rice products are healthy (46%), do not contain pesticides (35%), are environmentally friendly (15%) and the rest are for the welfare of farmers. The important attributes that are considered by respondents in buying organic rice products include fluffiness, quality, certification, price, and the ease of obtaining them. The information label attribute is an attribute that is considered very important in shaping consumer attitudes towards organic rice products. While the highest level of consumer confidence lies in the quality attribute. In general, organic rice products get a positive attitude from consumers. The positive attitude of consumers shows that the product can be accepted by consumers where in general the attributes they have are as expected. This research implies that the government should expand the area for planting organic rice, certify products, improve the packaging with information on nutritional content and guarantee that it is free of harmful chemicals, as well as promote through the advantages and benefits of organic rice.

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