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Pricing Strategy for the Organic Eggs: Willingness to Pay and Hedonic Price Approaches

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Abstract

Organic eggs have been marketed to provide safe food and protect the environment sustainability all at once. However, the high price is being an obstacle to expanding the organic egg market in East Java Province. The aims of this research were to analyze the factors that influence the willingness to pay (WTP) and hedonic prices of organic eggs and to formulate pricing strategies. This research was conducted by using an online survey method in East Java Province, Indonesia. The survey was conducted from May to July 2021. The obtained data were analyzed by using multinomial logistic, linear regression, and descriptive analysis. The results showed that 26.4% of consumers were willing to pay for organic eggs 10% more than the current price. The factor that influenced WTP was product quality. Meanwhile, the factors that influence the price were the eggs taste and the organic label. The results showed that market players of organic egg agribusiness still have the opportunity to increase the price of organic eggs. However, they must inform consumers about the health benefits of organic eggs and include them on the organic eggs label.

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INTRODUCTION

The production of organic foodstuffs, including organic eggs, continues to be encouraged in an effort to provide safe food and preserve the environment. The perceptions of value and consumer health awareness in Malang-East Java have influenced their buying interest and consumption of organic food (Adrian & Irawan, 2020; Budiyanto, 2014). The success of the environmentally friendly agriculture mission needs to be supported by the performance of supply, distribution, marketing (Krisno Budiyanto, 2012). Therefore, support from producers (farmers), marketers, and consumers was needed. Consumers who need healthy foodstuffs and are aware of the environment will be willing to pay for organic food which was more expensive than non-organic food (De-Magistris & Gracia, 2016; Zhang et al., 2018).

The price difference between conventional eggs and organic eggs was an obstacle to expanding the market. The efforts to reduce the price of organic food will encourage general consumers to buy organic food (Kantamaturapoj & Marshall, 2020). However, consumers not only consider the costs and benefits, but they bought organic food as a means to achieve important life values (Aslihan Nasir & Karakaya, 2014). Consumers who pro-environment (green consumers) were starting to realize the importance of buying organic foodstuffs, including organic eggs because they were cultivated in an environmentally friendly manner (Funk et al., 2021; Tandon et al., 2020; Verain et al., 2016).

The marketing concept that was in line with sustainable development should encourage consumers to be more concerned about the environment (Skowron & Szymoniuk, 2014). Therefore, in purchasing behavior there was a green buying consumer (Carfora et al., 2019; Zou & Chan, 2019). Consumers who have environmental awareness, for example, were shown in their willingness to pay for antioxidant eggs which were more expensive than conventional eggs (Relawati, Ariadi, & Harpowo, 2021).

Eggs were a consumption needs that were almost always kept by households for food reserves (Relawati, Ariadi, Bakhtiar, et al., 2021). The study of organic eggs consumers can take good lessons from consumer behavior in organic foods. Consumers' willingness to pay a premium price for safe eggs (not called organic) was positively influenced by family income, familiarity, differential cognition, safety awareness, nutritional health, packaging, label trust, and online shopping experience (Zhang et al., 2018).

The four factors (health awareness, knowledge, subjective norms, and prices) influenced consumer attitudes towards organic food products. However, the intention to buy organic food was influenced by these four factors plus the availability factor. These five factors also influenced actual buying behavior, but attitudes and purchase intentions mediated the connection. Furthermore, socio-

demographic factors (age, education and income) were also found to have an impact on actual buying behavior (Singh & Verma, 2017).

Consumption reflected high involvement in the product, obstacles and motivations as important as the product itself. The results showed that product-specific gestures, WTP, and availability had a significant positive effect on individual organic food consumption. This research provided insight and a better understanding of the actual consumption behavior of organic food (Chekima et al., 2019).

When the popularity of organic food in East Java Province was increasing, questions arise about how to determine the right price for organic products. The supports of WTP were classified into three categories: consumer-related, product-related, and place-related factors (Katt & Meixner, 2020). Consumers in Malang-East Java have started to show concern for the environment, such as apples that were cultivated in an environmentally friendly manner (Relawati et al., 2017b). For organic food, it was expected that environmental awareness will be better. Meanwhile, hedonic prices and WTP were also influenced by product attributes (Relawati et al., 2017a).

Previous studies have not integrated the hedonic price and WTP approaches simultaneously on organic eggs. The novelty of this research was to combine the WTP and hedonic price approaches to formulate an organic egg price strategy. The urgency of this research for the development of a green marketing concept was especially in determining the appropriate price to encourage the actual segment of organic eggs in East Java.

WTP used a consumer concern approach to the environment, while hedonic price used a product attribute approach. The research objectives were: 1) to analyze the factors that influence the willingness to pay for organic eggs, 2) to analyze the factors that influence the hedonic price of organic eggs, and 3) to formulate a pricing strategy to increase the market share of organic eggs.

RESEARCH METHOD

The research was conducted in East Java Province, as the largest producer of broiler eggs (Central Bureau of Statistics, 2021). Statistics did not record organic egg production, but online marketing mostly marketed organic eggs from the East Java region.

The research was conducted in May-July 2021, in the Covid-19 pandemic situation with limited mobility of researchers and physical meetings with respondents. The research population was consumers who have bought and consumed organic eggs. The research sample was determined by accidental sampling because the total population was not known certainty. The respondent's criteria were consumers who have purchased organic eggs for family consumption, at least two times. This criterion was intended to truly get actual buyers. The actual buyers who have purchased organic eggs and meet the requirements as respondents were 71 people.

The online survey method was distributed through social media owned by the research team, with the limitation only of consumers that were domiciled in East Java Province. The semi-open questionnaire in the form of an online form was distributed through the WhatsApp Group social media. The total samples of 71

people have met the minimum number of samples with regression analysis, which was multinomial logistic and linear regression. The minimum number of samples in the multinomial logistic and regression models was 10 times the number of independent variables (Kwak & Clayton-Matthews, 2002). The number of independent variables in the WTP and hedonic price analysis were five variables for each, thus the minimum number of samples was 50 people.

The measurement data included a ratio scale for measuring price, value and purchase intensity. The Likert scale was used to measure qualitative data that related to product attributes and environmental concerns.

The first objective analysis used a multinomial logistic model, which were the factors that affect the WTP of organic eggs. Logistic regression was used to see the connection between categorical (qualitative) dependent variables and independent variables which were nominal, ordinal, interval, and even ratio scales (Kwak & Clayton-Matthews, 2002; Tulong et al., 2018). The analytical model was written in formula (1).

$$WTP = a + b_1PROD + b_2HEALTH + b_3ENVIRO + b_4INCOME + e \quad \text{.....(1)}$$

Whereas;

WTP = Willingness to pay (measured from the following ordinal data choices:
1 = fixed price (same as existing price)
2 = price is 10 % more expensive than the existing price
3 = price is 20 % more expensive than the existing price
4 = price is 30 % more expensive than the existing price
PROD = product quality (measured from consumers rating by Likert scale)
HEALTH = Health motivation (consumers health motivation) – measured by Likert scale
ENVIRO = Environmental awareness - measured by Likert scale
INCOME = Rupiah (IDR) per month
e = error

All of the Likert scale measurements used range from 1 to 5 with determinations as follows:

1 = strongly disagree
2 = disagree
3 = hesitant
4 = agree
5 = strongly agree

The second objective analysis used multiple linear regression, in which examined the factors that affect the hedonic price of organic eggs. Multiple regression has been used in the previous research that examined the determinants of environmental awareness, health and lifestyles, product quality, supports to the farmers (Basha & Lal, 2019). The regression model on this research was written in the formula (2).

$$PRICE = a + b_1.FLAVOR + b_2.NUTRITION + b_3.LABEL + b_4.PACKAGING + e \quad \text{.....(2)}$$

Whereas

PRICE = Organic eggs price (Rp/kg)
a = constant
b1-b4 = regression coefficient
FLAVOR = Organic eggs taste

NUTRITION = Nutrition (nutritional content)
LABEL = Label
PACKAGING = Packaging
e = error

The third objective of the pricing strategy was analyzed descriptively. The description focused on the connection between the two results of the multinomial logistic and linear regression analysis. Both were related to the pricing strategy that must be determined by organic egg agribusiness actors. The description can also be used to verify the results of data analysis with the results of various previous researches and with theory.

RESULTS AND DISCUSSION

The Factors that Influence Willingness to Pay (WTP) of Organic Eggs

The WTP of organic chicken eggs was measured by a number of respondents' answer choices, such as: fixed price, 10%, 20%, 30%, and 40% more expensive price. The answers that were filled out by respondents (consumers) were mostly fixed prices, and the highest prices were 30% more expensive. Among consumers who were willing to pay more, the highest proportion was at a price that was 10% more expensive than the current price (26.4% of consumers). This means that there was still a 26.4% opportunity for marketers to increase 10% of organic eggs price compared to the current price (the existing price). Table 1 showed the detailed distribution of consumers on various percentages of WTP organic eggs.

Table 1. Willingness to pay for the organic eggs

Description	Number of respondents	Percentage
The average existing price of organic eggs	IDR 39,540	
WTP at fixed price	44	62.0
WTP at 10% more expensive	19	26.8
WTP at 20% more expensive	7	9.9
WTP at 30% more expensive	1	1.4

Furthermore, Table 2 presented the results of the multinomial logistic regression analysis on the WTP of organic eggs. The WTP of organic chicken eggs was influenced by the product quality. This was indicated by the significance value of 0.007 < 0.01, or said to be significant at the 99% confidence level. The multinomial logistics coefficient was 61.493, which means that the quality of organic eggs has a positive effect on the amount of willingness to pay (WTP) for the price of organic eggs. The higher the quality of organic eggs in consumer assessments, the higher the WTP of organic eggs.

Table 2. The analysis result of regression multinomial logistic on WTP of organic eggs

Variable	Variable description	Model fitting criteria (-2 Log likelihood of reduced model	Significance
Intercept		38.960	
Product*	Product quality attributes	61.493	0.007
Health	Consumer's health motivation	42.226	0.775
Environment	Consumer's environmental awareness	47.983	0.435
Income	Family income/month	72.657	0.578

The research results supported the results of previous researches which was consumers were willing to pay more for organic eggs than conventional eggs because of good taste and nutritional factors (Güney & Giraldo, 2020). The taste was an important attribute in eggs (Jessica et al., 2020). Consumers who have a concern for health were very concerned with nutrition; therefore they were willing to pay more for healthy food (Ali & Ali, 2020). Organic egg quality was influenced by the feed given and can be seen from sensory tests such as the color of egg yolk and shell (Hammershøj & Steenfeldt, 2015).

In this research, environmental awareness did not significantly increase WTP. This showed that consumers did not yet have an environmental future orientation, as stated by Chekima et al (2019) that future orientation encouraged organic food WTP. The results of this research were in line with (Tandon et al., 2020) that environmental awareness did not strengthen the motivation to buy organic food. However, the results of this research were different from the results of previous researches, that concern on food security and environmental consequences were in correlation with high-quality healthy food or green products (Maichum et al., 2016; My et al., 2017).

Similarly, income was not significant in influencing WTP. This was in line with previous research which stated that income did not encourage purchase intention of organic products (Freytag-leyer & Wijaya, 2015). However, the research results were also different from the article review which stated that income was a support for organic food consumption (Katt & Meixner, 2020), and income affected the WTP of high-quality food (Ali & Ali, 2020). The discussion that can be used as a reference was the market demand for organic eggs was not encouraged by the price factor, but consumers of organic eggs (for example in Poland) were from groups with relatively high incomes (Pawlewicz, 2020).

The Factors that Influence Hedonic price of organic eggs

The compatibility of the linear regression model was indicated by the R2 value of 0.273, which means the independent variable ability to explain the variation of the dependent variable was 27.3%. The value of the determination coefficient was quite low, but in regression models that used social variables, it often has an R2 less than 50%. The calculated F value was 6.209 and was significant at the <1%

level. This means that the independent variable in the regression model simultaneously affected the hedonic price.

Table 3. The result of linear regression analysis at the hedonic price of organic eggs

Variable	Standardized coefficient	Significance
Constant		0.074
Flavor**	0.347	0.008
Nutrition	-0.094	0.434
Label*	0.264	0.034
Packaging	0.090	0.466

*Significant at 5%
**Significant at 1%

The analyzed regression model found two significant independent variables, which were taste and organic label. The model also did not experience various interferences of classical assumptions, such as it did not experience multi-collinearity between independent variables, autocorrelation, and heteroscedasticity. It means that the linear regression model was feasible to use in estimating the hedonic price of organic eggs. The detailed results of the hedonic price analysis of organic eggs were presented in Table 3.

The hedonic price of organic chicken eggs was influenced by the taste and organic label. This was indicated by a significance value of 0.008, or significant at an error level of <1%. The magnitude of the regression coefficient on Flavor of 0.347 means that the higher the taste rating, the higher the price of organic eggs so that they have a premium price. The results of this research were in line with many previous pieces of research which stated that in organic eggs and or eggs that contain omega, taste quality was still an important consideration in purchasing eggs and other organic foods (Agovino et al., 2019; Ditlevsen et al., 2020; Güney). & Giraldo, 2020). In addition, the nutritional content of organic eggs also affected their quality (Güney & Giraldo, 2020; Sokołowicz et al., 2019).

The organic labels have a positive effect on the hedonic price of organic eggs. The higher the consumer's assessment of the organic egg label, the higher the hedonic price of organic eggs. The results of this research supported the results of previous researches on the importance of labeling organic products (Aitken et al., 2020; Katt & Meixner, 2020; Zhu et al., 2013). Labeling organic products can provide important information about the benefits to consumers' health, and environmental benefits. Even meaningful labeling can shape market segmentation and formed premium price (Mcfadden & Huffman, 2017). However, the results of this research were different from the REKO system's organic product marketing, which was more concerned with direct marketing to certified farmers (Szymoniuk & Valtari, 2018), thus consumer trust did not lie in organic product labels. The results of another research in Italy also stated that consumers paid little attention to environmentally friendly food labels (Mancini et al., 2017).

Pricing strategy for increasing market share of organic eggs

The strategy for implementing the price on organic eggs needed to consider the results of the WTP analysis and hedonic prices. Based on the WTP analysis, it was found that there were still 30% of consumers who were willing to pay 10% more than the price of organic eggs that currently prevailing in the market. This means that agribusiness actors have the opportunity to increase the selling price of organic eggs by 10% from the existing price, to be aimed at special market segments (26.4%) with higher purchasing power. Ditlevsen et al (2020) stated that the special market segment for organic food was urban communities with higher education. Another important segmentation basis was the attribute of organic food because it was related to the perception of health and environmentally friendly products (Verain et al., 2016). Marketing accuracy must pay attention to the most potential segments, without ignoring other markets (Antara & Utari, 2008). Furthermore, it was necessary to build a communication strategy for this segment (Kushwah et al., 2019).

The factor that affected WTP was product quality. Therefore, the premium price for organic eggs was worth setting if the quality of organic egg products must be good. This good egg quality determined its premium price (Güney & Giraldo, 2020). The most important product quality attribute was the taste of organic eggs, must be delicious with a non-fishy aroma, stronger egg yolk color, sturdy shell, and others. Physical characteristics and nutritional value were indicators of the quality of organic chicken eggs (Sokołowicz et al., 2019).

The hedonic price of organic eggs was influenced by the taste of the eggs and the organic label. The taste of organic eggs was considered by consumers to be more delicious, the aroma was not fishy, and the yellow color was stronger. Taste and aroma were important factors in food product preferences (Agovino et al., 2019; Ditlevsen et al., 2020). Product improvement that must be performed was an informative label so that consumers have confidence in the product. Several previous pieces of research have stated the importance of labelling organic products (Aitken et al., 2020; Mcfadden & Huffman, 2017).

CONCLUSION

Willingness to pay for organic chicken eggs was influenced by the quality of the product, and organic egg agribusiness players still have the opportunity to increase the premium price by 10% more than the current price. The hedonic price of organic chicken eggs was influenced by the taste and the organic label. Therefore, premium pricing must consider the quality of organic eggs and provide an informative label. The determination of premium prices for organic eggs needed to be aimed at special market segments, such as consumers who have higher purchasing power.

RECOMMENDATION

Further research needs to examine the effective marketing communication forms through the inclusion of organic labels on organic egg packaging. Organic labels and effective content of information/messages need to be reviewed comprehensively. The applicative advice given to organic egg agribusiness actors is the marketing of organic eggs in special market segments at organic outlets or in

modern supermarkets. Marketers need to include organic labels along with information on the benefits of environmental awareness through organic products consumption.

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