Consumer decision to buy brown rice in traditional markets

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Abstract. Brown rice consumption varies depending on the amount of purchase. The amount of brown rice purchased by the community is influenced by the product attributes they have. Product attributes consist of two, namely extrinsic product attributes and intrinsic product attributes. The purpose of this study was to analyze the relationship between the attributes of brown rice products with the purchasing decision of consumers of brown rice. This research was located in three different traditional markets in Makassar City, that is Daya Market, Panakukkang Market, and Terong Market. The object of the research is the direct consumer who comes shopping at the traditional markets consisting of 96 people. The statistical analysis used in this research is the chi-square test. The results of this research show some extrinsic and intrinsic product attributes, which have a relationship with purchasing decisions for brown rice. Product extrinsic attributes that have a relationship with purchasing decisions are price, location, and brand. While the form of red rice grains is an intrinsic attribute that has a relationship with purchasing decisions.

1. Introduction
Brown rice is starting to be in demand by the urban community, especially at the household level, but the level of consumption is still relatively small. Brown rice is starting to be in demand because it has a lot of ingredients that are beneficial to health. Public consumption of brown rice varies depending on the ability of consumers to buy it. There are consumers who buy large quantities; there are also those who buy brown rice in small quantities. Public interest in buying brown rice is influenced by consumer responses to a set of attributes owned by brown rice.

According to Cahyo et al. [1] and Handriana [2], there are two dimensions of product attributes, namely intrinsic (central) and extrinsic attributes. Intrinsic attributes are specific attributes for each product that will disappear when the product is consumed and cannot be changed without changing the nature of the product itself, while extrinsic attributes are all aspects related to the product but are not physically part of it.

In addition to product attributes, places to shop are also used by consumers as a basis for consumer decisions making in choosing brown rice. These conditions cause traditional markets to be considered a place to buy brown rice.

From the description above, the authors are interested in conducting research to understand consumer considerations in purchasing brown rice. This study aims to: analyze the relationship...
between product attributes (intrinsic attributes and extrinsic attributes) with the decision to buy brown rice at the Traditional Market, City of Makassar.

2. Methods
This research was conducted in the area of Makassar City, namely Daya Market, Panakukkang Market, and Terong Market. Determination of this location is done purposively by considering that the research site can represent traditional markets from various regions in Makassar City. The number of visitors in the three traditional markets cannot be known with certainty, so to calculate the minimum number of samples needed using the Lemeshow formula for unknown populations:

\[ n = \frac{Z^2 \times P(1 - P)}{d} \]  

(1)

Note:
- \( n \) = Number of sample
- \( z \) = score \( z \) in level of trust 95% = 1.96
- \( p \) = maximum estimate = 0.5
- \( d \) = alpha (0.10) or sampling error = 10%

Based on the above calculation, the number of samples taken in this study was 96 people divided into 32 people in each of the traditional market locations studied. After all the required data is collected, the data analysis is done quantitatively. Data obtained in the study are processed/analyzed and described as follows:

2.1. Chi-Square Test
Chi-square analysis in this study was used to determine the relationship between intrinsic attributes (Scent, Taste, Color, Nutrition, Texture, and Shape) and extrinsic attributes (Price, Location, Brand, and Packaging) with the decision to purchase brown rice at the Traditional Market, City Makassar. Chi-Square Analysis is a test method to see whether there is a significant relationship or not on some of the observed variables. The formula used in the Chi-Square analysis [3] is:

\[ \chi^2 = \sum \frac{(f_0 - f_n)^2}{f_n} \]  

(2)

ket: \( \chi^2 \) = Chi-Square
- \( f_0 \) = Observed Frequency
- \( f_n \) = Expected Frequency

Chi Square Test was performed using statistical analysis software with a significant level of 0.05 and 2x2 tables.

In Chi-Square Analysis, determined the following hypothesis:
- \( H_0 \) = Absence of relationship of intrinsic and extrinsic variables with purchasing decision
- \( H_\alpha \) = Existence of relationship of intrinsic and extrinsic variables with purchasing decision

3. Results and Discussion

3.1. Relationship Between Products Attributes with Purchasing Decisions
Relationship of Extrinsic Product Variables with Purchasing Decision. Product extrinsic variables include Price, Location, Brand, and Packaging. While consumer purchasing decisions are the number of brown rice purchases. Each research variable was assessed according to 2 categories. The purchase price of rice is classified into two categories, namely low price, and high price. The location of the purchase is classified into two categories, namely far and near the respondent's house from the location of the rice purchase. The red rice brand is classified into two categories, namely branded and non-
branded brown rice. Brown rice packaging is also classified into two categories, good brown rice and bad packaging. The results of the analysis of the relationship between product extrinsic variables with consumer rice purchasing decisions can be explained as follows:

Table 1. Relationship of Extrinsic Product Attributes with Purchasing Decision for Brown Rice in Traditional Market, City of Makassar, 2019

| No. | Extrinsic Product Variables | Decisions/Number of Purchasing | Total | $X^2$ |
|-----|-----------------------------|-------------------------------|-------|-------|
|     |                             | Many | Slight |       |
| 1   | Price                       |      |        |       |
|     | Inexpensive                 | 29   | 44     | 73    | 3.87 |
|     | Expensive                   | 4    | 19     | 23    |      |
|     | **Total**                   | **33** | **63** | **96** |      |
| 2   | Location                    |      |        |       |
|     | Far                         | 19   | 55     | 74    | 10.83|
|     | Near                        | 14   | 8      | 22    |      |
|     | **Total**                   | **33** | **63** | **96** |      |
| 3   | Brand                       |      |        |       |
|     | Branded                     | 5    | 22     | 27    | 4.19 |
|     | Not Branded                 | 28   | 41     | 69    |      |
|     | **Total**                   | **33** | **63** | **96** |      |
| 4   | Packaging                   |      |        |       |
|     | Nice Packaging              | 22   | 45     | 67    | 0.23 |
|     | Bad Packaging               | 11   | 18     | 29    |      |
|     | **Total**                   | **33** | **63** | **96** |      |

Note: $X^2$ in distribution table Chi-Square (3.841)

Based on the Chi-Square figures in table 1, it is known that there is a relationship between price, location, and brand with the decision/number of purchases. In the $X^2$ distribution table at degrees of freedom one, shows the number 3,841 at a significance level of 0.05. This is still smaller than the chi-square ($X^2$) number in the price, location, and brand variables. Therefore, it can be said that the amount of brown rice purchases is related to the price of rice, market location, and brand of brown rice. Conversely, the calculated Chi-square number (0.23) in table 1 is smaller than the number $X^2$ in the chi-square probability distribution table. This means that packaging is not a consideration in purchasing decisions for brown rice.

The price of brown rice is considered by consumers in deciding the amount of rice purchased. In general, respondents buy cheap brown rice, and there is a tendency for consumers to buy less if the price of brown rice is high. Consumers will compare prices offered before making a purchase process. This is influenced by the people's purchasing power for a product so that they are always looking for cheaper rice. The results of this study are in line with the opinion of Ratnaningrum [4], who said that in the purchasing process, consumers would compare the prices of these products with other products. This comparison process will influence consumer purchasing decisions.

The market location is also a consideration of consumers in deciding the amount of rice purchased. There is a tendency that consumers who live far from traditional market locations will buy brown rice in large quantities, whereas consumers who live close to traditional market locations will buy brown rice in small amounts. This is due to the consideration that if the consumer is close to the market, he can buy rice at any time, so there is no need to buy in large quantities. In addition, consumers will also choose a place that is close in choosing the location of the purchase, with the consideration that the place is safe and easy to reach. This is in line with research conducted by Ghanitama [5], which says that strategic location makes consumers easier to reach and also more secure security.

This research also shows the tendency of consumers to buy brown rice with a small number of purchases for the non-branded type of brown rice. Non-branded brown rice is sold in bulk and is easily obtained, so many consumers buy the rice. The perception that branded brown rice has better quality
also influences consumers to buy branded brown rice. Brands listed in brown rice can be a differen
tiator from other types of brown rice. The differences found in branded brown rice affect consumer purchases. In line with Ikhwanuddin's research [6], it is said that the rice brand listed on the market can help consumers not to buy the desired rice.

3.2. Relationship of Intrinsic Product Variables with Purchasing Decisions

Intrinsic attribute variables in this study include aroma, taste, color, nutritional content, texture, and shape. While consumer purchase decisions consist of decisions on the number of brown rice purchases. The intrinsic aroma variable is divided into two categories, namely, scented brown rice and scented brown rice. Rice flavor variables are classified into two categories, bland brown rice and those that have a distinctive taste. The color of red rice is also classified into two categories, namely bright red rice and dark red rice. The nutritional content variable is classified into two categories; they are considered to be able to meet nutritional needs and not able to meet nutritional needs. Texture variables are categorized into two categories, namely brown rice, which has a fluffier texture, and pera textured red rice. The red rice form variables in this study were also categorized into two categories, namely whole grain rice and broken grain. The results of the analysis of the relationship between intrinsic product variables and brown rice purchasing decisions can be explained in Table 2.

| No | Intrinsic Product Variables | Purchasing Decision | Total | $X^2$ |
|----|------------------------------|---------------------|-------|------|
|    |                              | Many | Slight |       |
| 1  | Scent                        |       |        |       |
|    | Scented                      | 27   | 45     | 72    | 1.25 |
|    | Unscented                    | 6    | 18     | 24    |      |
|    | **Total**                    | **33**| **63** | **96**|      |
| 2  | Flavor                       |       |        |       |
|    | Distinctive                  | 25   | 50     | 75    | 0.16 |
|    | Flavorless                   | 8    | 13     | 21    |      |
|    | **Total**                    | **33**| **63** | **96**|      |
| 3  | Color                        |       |        |       |
|    | Bright Red                   | 25   | 56     | 81    | 2.83 |
|    | Dark Res                     | 8    | 7      | 15    |      |
|    | **Total**                    | **33**| **63** | **96**|      |
| 4  | Nutrient Content             |       |        |       |
|    | Sufficient                   | 28   | 51     | 79    | 0.23 |
|    | Unsufficient                 | 5    | 12     | 17    |      |
|    | **Total**                    | **33**| **63** | **96**|      |
| 5  | Texture                      |       |        |       |
|    | Fluffy                        | 26   | 45     | 71    | 0.61 |
|    | Dry                          | 7    | 18     | 25    |      |
|    | **Total**                    | **33**| **63** | **96**|      |
| 6  | Shape                        |       |        |       |
|    | Intact                       | 22   | 53     | 75    | 3.86 |
|    | Broken                       | 11   | 10     | 21    |      |
|    | **Total**                    | **33**| **63** | **96**|      |

Note: X2 in distribution table *Chi-Square*(3,841)

In the Chi-Square test result shows in table 2, it is known that there is a relationship between the form of red rice grains with the decision/number of consumer purchases. In the X2 distribution table at degrees of freedom one, shows the number 3,841 at a significance level of 0.05. This is still smaller than the chi-square (X2) number in the variable shape of red rice grains. In general, consumers prefer brown rice, which is whole or less broken.
This also means that rice that has whole grains tends to have more purchases than brown rice with broken grains. The shape of rice grains determines the quality of rice. Rice grains that appear intact or not many are broken are considered by consumers in choosing the type of rice to be purchased. According to Yulfira [7], the shape of the grain can determine whether or not rice is damaged (stale). The more head rice (whole-form rice) compared to broken rice, the better the rice is for consumption.

In general, intrinsic variables don’t have a real relationship with the decision of the amount of brown rice that consumers buy. Intrinsic variables that are not related to the number of consumer purchase decisions are scent, taste, color, nutritional content, and texture. The scent of brown rice, in general, is relatively the same as all types of brown rice, so it is not a major consideration in purchasing decisions. The chi-square number in the scent variable analysis (1.35) is smaller than the X2 number in the Chi-Square distribution table (3.841). The chi-square number in the analysis of the taste, color, nutritional, and texture variables is smaller 3,841, so it can be said that the variable is not significantly related to the decision to purchase the amount of brown rice.

4. Conclusion
The results of this study indicate that there are a number of extrinsic variables related to brown rice purchasing decisions. Extrinsic variables that have a significant relationship with consumers’ decision to buy brown rice are price, location, and brand. While the extrinsic packaging variable is not related to rice purchasing decisions. Brown rice consumers do not consider packaging in their purchasing decision processes. In general, intrinsic variables don’t have a significant relationship with consumer rice purchasing decisions. Intrinsic variables that have no relationship with purchasing decisions are the aroma, taste, color, nutrient content, and texture of brown rice. While the intrinsic variable form of rice has a significant relationship with purchasing decisions. This means that the form of whole brown rice grains is considered by consumers in deciding to buy brown rice. The form of whole rice is an indicator of the quality of rice that consumers like so that it is always a consideration of consumers in deciding their purchase.

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