



The Effect of Crystal Herbal Beverages Characteristics on Consumers' Buying Decision of Company "X" in the Special Region of Yogyakarta

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ABSTRACT

This research aimed to investigate the characteristics of instant herbal beverages (i.e. taste, aroma, colors, ingredients, shelf life, and packaging) produced by Company X. In addition, the effects of its characteristics on the Company X customers' decisions to buy the product in Special Region of Yogyakarta was also studied. The study used the statistics descriptive method. The data were then collected using questionnaires. The total sample of this research was 40 people. They were selected using a convenience sampling technique who live in the Special Region of Yogyakarta. The data were analyzed using the multiple linear regression method. The analysis results showed that the taste of instant herbal beverages produced by Company X was in the moderate category. Meanwhile, the aroma, color, ingredients, shelf life, packaging, and customers' decision were in a good category. Simultaneously, the taste, aroma, colors, ingredients, shelf life, and packaging of the product significantly affected the consumers' decisions to buy the product by 57.8%. Partially, the taste, colors, and shelf life significantly affected the consumers' buying decision of instant herbal beverages produced by Company X

1. INTRODUCTION

1.1. Research Background

Public awareness of a healthy lifestyle has increased during the COVID-19 pandemic. People are starting to make health a top priority marked by changes in their diet and nutritional intake, which is by starting to consume a healthy drink made from medicinal plants, especially rhizomes including ginger, turmeric, Curcuma, etc [1].

The increasing public interest in the use of medicinal plants is caused by the trend back to nature which makes people aware of the health benefits of the commodities [2]. Based on the Indonesian Food and Drug Agencies, there was an increase in the number of applications for registration of traditional medicine products by 131.14% in 2020, which means there was an increase in public demand for herbal products [3]. This is an opportunity for herbal manufacturers to produce various health drink products. Along with the development of the times that demand fast-paced activities, manufacturers choose powder or crystal dosage forms for health drinks because of their instant and practical. In line with this, the types of powdered health drinks circulating in the community are also increasing. The large variety of products circulating in the market is one of the company's steps to face market competition. To provide a special

perception of their products, manufacturers always provide characteristics in their health drink products.

Product characteristics are usually seen in the physical appearance of the product or the attributes and quality of the product offered. Product characteristics are an important factor that can make a product have its value in the eyes of consumers, the better the characteristics of the product displayed are expected to be able to lead consumers to the decision to buy [4].

Susanto *et al.* [5] stated that there was a significant effect between product quality and the buying decision of consumers of Frestea beverages. It means that the better-quality product was followed by the higher consumer's buying decision.

Company X is one of the herbal medicine manufacturers that produce functional drinks. So far, it has produced 2 types of functional drinks in crystal form, namely Product A and B. The main difference between the two products is in the main components of their ingredients. Product A is made from rhizomes of ginger, turmeric, and milk, while Product B is made from rhizomes of ginger, Curcuma, and turmeric. Both are packaged using 300 g of plastic tube packaging. Both products are crystal herbal beverages, and Product A possessed a lower sales rate compared to Product B. In 2021, the number of sales of Product A was only 850 pieces, while product B sold as many as 3.530 pieces. This indicates that consumers tend to prefer the characteristics of product B over Product A. Facing that problem, Company X must improve the characteristics of crystal herbal

beverages products, especially Product A to attract consumers. So This research will focus on Product A as instant herbal beverages. This research aimed to investigate the characteristics of instant herbal beverages (i.e. taste, aroma, colors, ingredients, shelf life, and packaging) produced by Company X. In addition, the effects of its characteristics on the Company X customers' decisions to buy the product in Special Region of Yogyakarta was also studied

1.2. Literature Review

Product is everything offered to the target market that aims to meet the wants and needs of the buyer [6]. Crystals (powders) are products that are prepared from fine grains, while crystal herbal beverages are derived from spices taken from rhizomes used as the basic ingredients for traditional herbal medicine [7].

Product characteristics are the difference in the condition of a product against competing products offered to consumers to meet their needs. Before buying a product, consumers will compare the product characteristics of various brands and will tend to choose the brand that has the most desirable characteristics, so the characteristics of the products displayed are expected to be able to lead consumers to the decision to buy [8].

The buying decision is the reasons underlying the purchase of products by consumers according to their needs, expectations, and desires that result in satisfaction or the opposite [9]. There are five stages of the consumer's buying decision, problem recognition, information gathering, alternative evaluation, purchase phase, and post-purchase phase [10].

1.3. Research Objective

This research aims to investigate the crystal herbal beverages product characteristics (i.e. taste, aroma, color, ingredients, shelf life, and packaging) produced by Company X and the effects of its characteristics on Company X Consumers' buying decisions.

2. MATERIALS AND METHODS

This study was conducted at Company X located in the Special Region of Yogyakarta using a quantitative descriptive method to determine the effect of product characteristics (taste, aroma, color, composition, shelf life, packaging) on buying decisions.

The study population was potential consumers of Company X crystal herbal beverages products, samples were selected through the non-probability sampling technique using convenience sampling. The sample numbered 40 people aged 18-65 years and lived in the Special Region of Yogyakarta. The research data were obtained from the results of direct observations, scientific literature studies, and the distribution of questionnaires which were then analyzed using multiple linear regression analysis.

3. RESULT AND DISCUSSION

3.1. Overview of Research Objects

Crystal herbal beverages are functional brewed drinks made from a combination of spices, namely ginger and turmeric as well as accompanying ingredients in the form of milk and sugar. Functional drinks must fulfill two main functions, providing nutritional intake and sensory satisfaction such as good taste and good texture [11].

Crystal herbal beverages are made by the crystallization method, the spices that have been extracted in liquid form then were cooked with milk, sugar, and other additives until they become powder/crystal preparations. In the manufacturing process, crystal herbal beverages were not added with preservatives, synthetic flavorings, sweeteners, and preservatives that are completely derived from sugar raw materials.

The way to present this product is by brewing 2 tablespoons of crystal herbal beverages with 200 ml of hot water. This product has a shelf life of up to 2 years after being produced.

3.2. Characteristics of Respondents

Based on Table 1, it can be observed that in this study as many as 53% or 21 respondents were male while 47% or 19 respondents were female. Respondents aged 18-25 years have the highest percentage, which is 75% or 30 people. As many as 75% or 30 respondents are domiciled in Yogyakarta City, 68% of respondents are still students, as many as 83% or 33 respondents have an income of < 2 million and from 40 respondents it is known that as many as 73% or 31 respondents have never consumed crystal herbal beverages drinks before, while 27% or as many as 9 respondents have consumed crystal herbal beverages.

Table 1. Characteristics of respondents

| Characteristic | Description | Frequency | Percentage |
|--|-------------------|-----------|------------|
| Gender | Male | 21 | 53% |
| | Female | 19 | 47% |
| Age | 18 - 25 | 30 | 75% |
| | 26 - 35 | 2 | 5% |
| | 36 - 45 | 1 | 2% |
| | 46 - 55 | 2 | 5% |
| | 56 - 65 | 5 | 13% |
| | Bantul | 4 | 10% |
| Place of origin | Gunung Kidul | - | - |
| | Kulon Progo | 1 | 2% |
| | Sleman | 5 | 13% |
| | Yogyakarta City | 30 | 75% |
| | Student | 27 | 68% |
| | Farmer | - | - |
| Job | Merchant | 10 | 25% |
| | Civil servants | 1 | 2% |
| | Employee | 1 | 3% |
| | Employer | 1 | 2% |
| | Etc. | - | - |
| | < IDR 2 million | 33 | 83% |
| Income Range | IDR 2 - 5 million | 4 | 10% |
| | >IDR 5 million | 3 | 7% |
| Respondents have consumed the products | Yes, they have | 9 | 27% |
| | No, they have not | 31 | 73% |

3.3. Validity and Reliability Test

The validity test was tested on the variables of taste, aroma, color, composition, shelf life, packaging, and buying decision. Based on the analysis that has been carried out, the results of the validity test reveal that 7 variables are valid, with a value of r -counting each variable $> r$ -Table or r -calculate > 0.632 . The reliability test was tested on the variables of taste, aroma, color, composition, shelf life, packaging, and buying decision. The analysis shows that all variables are reliable, proved by the results of the analysis where the value of all Cronbach's alpha variables $> r$ table or Cronbach's alpha > 0.632 .

3.4. Descriptive Characteristics of Product

3.4.1. Taste

The results of the descriptive analysis of taste variables are found in Table 2 which shows that the taste characteristics have a percentage of 60% so the taste variable was in a sufficient category.

Table 2. Taste characteristics

| No | Statement | Percentage | Category |
|-------|---|------------|------------|
| 1 | The taste of the product suits your taste | 62% | Good |
| 2 | The taste of the product isn't bitter | 77% | Good |
| 3 | The taste of milk is intense | 50% | Sufficient |
| 4 | The taste of spices is strong | 53% | Sufficient |
| Total | | 60% | Sufficient |

The indicator with the lowest percentage is "The taste of milk is intense", which is only 50% and is in the sufficient category. This shows that the taste of milk in the product is less intense. The next indicator with a low percentage is "the taste of spices taste is strong" with a percentage of 53% being in the sufficient category. the concentration of milk flavor and spices in the product can be increased by the addition of the serving dose, as well as by increasing the percentage of milk and spices as raw materials.

3.4.2. Aroma

The results of the descriptive analysis of the aroma variable are found in Table 3 which shows that the aroma variable has an achievement percentage of 62% so it can be said that the aroma variable was in a good category.

Table 3. Aroma characteristics

| No | Statement | Percentage | Category |
|-------|--|------------|------------|
| 1 | The aroma before brewing is strong | 70% | Good |
| 2 | The aroma after brewing is strong | 48% | Sufficient |
| 3 | The aroma suits the combination of aromas in raw materials | 68% | Good |
| Total | | 62% | Good |

According to Table 3, the aroma indicator at the time before brewing has a good category (70%), while the aroma of the product after brewing has a sufficient category (48%). This indicates that there is a significant change in the aroma before and after brewing. Overcoming the significant difference in that

situation can be solved by increasing the dosage of the serving. The serving dose of crystal herbal beverages itself is 2 tablespoons for 200 ml of water so that the serving dose can be increased to increase the aroma indicators after brewing.

3.4.3. Color

The results of the descriptive analysis of color variables are found in Table 4 which shows that the color variable has a total score of 764, the average value (mean) is 3.82, with an achievement percentage of 76% so it can be said that the color variable is in a good category.

Table 3. Color characteristics

| No | Statement | Percentage | Category |
|-------|---|------------|----------|
| 1 | The color before brewing is attractive | 76% | Good |
| 2 | The color after brewing is attractive | 70% | Good |
| 3 | The color looks natural and does not use chemical dye additives | 82% | Good |
| 4 | The color before brewing corresponds to the color of the composition of the ingredients | 81% | Good |
| 5 | There is no significant discoloration before and after brewing | 75% | Good |
| Total | | 76% | Good |

The highest indicator (82%) is "the color looks natural and doesn't use chemical dye additives". Natural food colors are derived from plants, animals, and minerals [12].

Crystal herbal beverages are not added synthetic dyes, the colors created are entirely derived from natural ingredients namely turmeric, ginger, milk, and sugar.

3.4.4. Composition

The results of the descriptive analysis of composition variables are found in Table 5 which shows that the composition variable has an achievement percentage of 83% so it can be said that the composition variable is in a good category

Table 5. Composition characteristics

| No | Statement | Percentage | Category |
|-------|--|------------|----------|
| 1 | The composition is made from natural ingredients | 85% | Good |
| 2 | The composition is made from selected ingredients | 79% | Good |
| 3 | The composition indicates the origin of the original Indonesian spices | 85% | Good |
| 4 | The product does not contain chemical food additives | 82% | Good |
| Total | | 83% | Good |

The composition was made from natural and selected ingredients because the product was made from a combination of ginger and turmeric spices where the rhizome ingredients used must comply with company standards, and the rhizome does not contain the disease. The rhizome used is fresh rhizomes without going through a long storage process. In the manufacturing process, crystal herbal beverages are no added preservatives, synthetic flavorings, or sweeteners, sweeteners, and preservatives are completely derived from natural sugar.

3.4.5. Shelf Life

The results of the descriptive analysis of the shelf-life variable are found in Table 6, which shows that the shelf-life variable has an achievement percentage of 74% so it can be said that the shelf-life variable is in a good category.

Table 6. Shelf-life characteristics

| No | Statement | Percentage | Category |
|-------|---|------------|----------|
| 1 | Products have a long shelf life | 77% | Good |
| 2 | The shelf life of the product can compete with similar products in the market | 71% | Good |
| Total | | 74% | Good |

Crystal herbal beverages have a shelf life of 24 months after being produced, while red ginger crystals have a shelf life of up to 20 months [13]. By looking at the comparison, it can be said that Company X's crystal herbal beverages have a shelf life that can compete with similar products in the market.

3.4.6. Packaging

The results of the descriptive analysis of packaging variables are contained in Table 7, the descriptive statistics of the packaging variables show a percentage of achievement of 80% so it can be said that the packaging variable is in a good category.

Table 7. Packaging characteristics

| No | Statement | Percentage | Category |
|-------|--|------------|----------|
| 1 | Packaging is attractive | 80% | Good |
| 2 | Practical and easy-to-carry packaging | 66% | Good |
| 3 | Packaging able to protect the product | 79% | Good |
| 4. | Complete packaging information with the expired date | 84% | Good |
| 5. | Complete packaging information with the composition | 84% | Good |
| 6. | Complete packaging information with the halal label | 84% | Good |
| 7. | Complete packaging information with production code | 85% | Good |
| 8. | There is a PIRT license on the packaging | 83% | Good |
| Total | | 80% | Good |

The packaging on crystal herbal beverages already contained information about the expiration date, composition, halal label, production code, and PIRT license, this makes the information indicators on the packaging good. PIRT itself is a license for the home food industry provided by the Indonesian government which indicates that the product has met the standards so that it is suitable for consumption. The completeness of the PIRT license, halal label, and expired date on the packaging are crucial factors for consumer interest because by including the permit, the product is considered to have met the established quality standards [14,15]

3.4.7. Buying decision

The results of the descriptive analysis of buying decision variables are contained in Table 8, which shows that the buying decision variable has an achievement percentage of 70% so it can be said that this variable is in a good category.

Table 8. Buying decision

| No | Statement | Percentage | Category |
|-------|--|------------|------------|
| 1 | I will buy crystal herbal beverages based on my need | 73% | Good |
| 2 | Before buying I will compare crystal herbal beverages product with similar products from other companies | 77% | Good |
| 3 | I am more interested to buy crystal herbal beverages product than other products | 70% | Good |
| 4 | I will buy crystal herbal beverages because the products are high quality | 71% | Good |
| 5 | I will provide information to family/friends/relatives to buy crystal herbal beverages | 69% | Good |
| 6 | I plan to repurchase crystal herbal beverages product | 59% | Sufficient |
| Total | | 70% | Good |

The indicator that has the lowest percentage (59%) is "I plan to repurchase crystal herbal beverages product", this indicates that consumers are less likely to want to repurchase crystal herbal beverages. Because in this study, as many as 68% of respondents are still a student and 83% of respondents have incomes below IDR 2,000,000 purchasing power, and consumers are low. The income level will affect the frequency of purchases, people with low incomes have a lower frequency of purchases compared to people with high incomes [16]. In addition, the low repurchase rate is also caused by consumer satisfaction with the taste characteristics of products that are still in the sufficient category (60%) where the taste of spices and milk are less concentrated. Consumer satisfaction is a feeling of consumer pleasure or disappointment regarding the characteristics of the product with the desired expectations [17]. When consumers are satisfied, there will be loyalty that encourages consumers to repurchase [18].

3.5. *Classic Assumption Test*

The classic assumption test was tested against all 7 research variables stating that the regression model was normally distributed, and there were no symptoms of multicollinearity, autocorrelation, and heteroskedasticity.

3.6. *The Effect of Crystal Herbal Beverages Product Characteristics on Consumers' Buying Decision*

In this study, simultaneously testing the characteristics of crystal herbal beverage products (taste, aroma, color, composition, shelf-life, packaging) on consumers' buying decisions was carried out. Based on the F-test analysis, an F-count value of $7.546 > F$ Table (6;34) (2.380) with a significance value of $0.000 < 0.05$ at a significance level of 5% which means product characteristics (taste, color, aroma, composition, shelf life, packaging) simultaneously had a significant effect on the consumers' buying decision of crystal herbal beverages product.

Partially the product of the characteristic (taste, aroma, color, composition, shelf life, packaging) on buying decision was tested using a t-test. The results of the analysis showed that the taste variable had a t-count of 2.148 with a significant value of 0.039, the color variable had a t-count of 3.224 with a significant value of 0.003, and the shelf-life variable had a t-count of 3.295 with a significant value of 0.002. The three variables have a t-count $> t$ table (2.037) with a significant value < 0.05 which means, partially the variables of taste, color, and shelf-life affect the consumers' buying decision of crystal herbal beverages. Meanwhile, the aroma variable has a t-count of 0.834 with a significant value of 0.410, the composition variable has a t-count of 0.599 with a significant value of 0.553, and the packaging variable has a t-count of 0.834 with a significant value of 0.170, the three variables have t-count $< t$ -table (2.037) and significant value > 0.05 then the aroma variable, composition, and packaging do not partially affect the consumers' buying decision of crystal herbal beverages.

3.7. *Multiple Linear Regression*

Multiple linear regression analysis aims to determine the linear influence between free variables on bound variables. The result of the analysis generates the following equations below:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6$$

$$Y = 3,668 + 0,332X_1 + 0,168X_2 + 0,502X_3 + 0,136X_4 + 0,800X_5 + (-0,190) X_6$$

The value of the constant (a) of 3.668 indicates that if the taste, aroma, color, composition, shelf-life, packaging) are joint of constant value then the buying decision is worth 3,668.

The taste has a regression coefficient value (b1) of 0.332, which means that if the taste variable increases by one unit, it will increase the buying decision by 0.332 or 33%. Based on the regression equation, the better the indicators of the taste variable will increase the purchasing decision. In this study, taste partially had a significant effect on purchasing decisions, this was shown by the results of partial analysis (t-test) where the taste variable had a t-count of $2.148 > t$ Table 2.0369, with a significant value of $0.039 < 0.05$ so that taste had a significant and positive effect on purchasing decisions. According to Drummond KE & Brefere LM [19], when consumers consume a beverage or food product, the first thing that will be assessed is the taste of the product. So, the taste must be considered by all types of businesses that produce drinks and food [20].

The aroma has a regression coefficient (b2) value of 0.168 which means that if the aroma variable has an increase of one unit, it will increase the purchase decision by 0.168 or 16.8% then the better the aroma variable indicator will increase the purchase decision, but in this study, the aroma does not partially affect the purchase decision. This is shown by the results of partial analysis (t-test) where the aroma variable (X2) has a t-count of $0.834 < t$ -Table 2.037, with a significant value of $0.410 > 0.05$, then the aroma does not have a significant effect on purchasing decisions so it cannot be explained its effect.

The colors have a regression coefficient value (b3) of 0.502 which means that if the color variable has an increase in one unit, it will increase the purchase decision by 0.502 or 50% so the better the color variable indicator will increase the purchase decision. In this study, color partially had a significant effect on purchasing decisions, this was proven by the results of partial analysis (t-test) where color variables had a t-count of $3.224 > t$ Table 2.037, with a significant value of $0.003 < 0.05$ so that colors had a significant and positive effect on purchasing decisions. Consumers tend to see the color first before tasting the taste of the product, so that color affects the acceptance of the product in the eyes of consumers [21].

The composition has a regression coefficient value (b4) of 0.502 which means that if the aroma variable increases by one unit, it will increase the purchase decision by 0.502 or 50.26%. Thus, the better the variable indicators of composition will increase the purchasing decision, but in this study, the composition partially does not affect the purchasing decision. This is indicated by the results of a partial analysis (t-test) where the composition variable has a t-count of $0.599 < t$ Table 2.037, with a significant value of $0.553 > 0.05$, so the composition does not have a significant effect on buying decisions.

Shelf life has a regression coefficient value (b5) of 0.800 which means that if the shelf-life variable has increased by one unit, it will increase the purchase decision by 0.800 or 80% then the better the shelf-life variable indicator will increase the purchase decision. In this study, shelf life partially had a significant effect on purchasing decisions, this was proven by the results of partial analysis (t-test) where the shelf-life variable had a t-count of $3.295 > t$ Table 2.037, with a significant value of $0.002 < 0.05$ so that shelf life had a significant and positive effect on purchasing decisions. In this study, the shelf-life variable has the highest regression coefficient value (0.800) which indicates that for crystal herbal beverages, shelf life is the main characteristic that is considered for consumers buying decisions. Shelf life is highly considered by consumers because it is related to product quality and safety, products that are of high quality and safe for consumption are products that are still in their shelf life, if they pass the shelf life, the quality of the product will decrease and can be dangerous for the health [22].

Packaging has a regression coefficient value (b6) of (-0.190) which means that if the packaging variable experiences an increase of one unit, it will reduce the purchase decision by 0.190 or 19%, the better the packaging variable indicator will reduce the purchase decision, but in this study, the packaging partially does not affect the purchasing decision. This is indicated by the results of a partial analysis (t-test) where the packaging variable has a t-count of $0.834 < t$ Table 2.037, with a significant value of $0.170 > 0.05$ so the packaging does not have a significant effect on purchasing decisions. This indicates that the crystal herbal

beverages packaging does not create an impression in the consumer's eyes.

4. CONCLUSION

Company X's crystal herbal beverages products have taste characteristics in the sufficient category, while the characteristics of aroma, color, composition, shelf-life, packaging, and buying decision are in a good category. Product characteristics including taste, aroma, color, composition, shelf-life and packaging simultaneously have a significant effect on the consumers' buying decision of Company X's crystal herbal beverages with a percentage of influence of 57.8%. Partially only the taste, color, and shelf-life characteristics have a significant effect on the buying decision, while the characteristics of aroma, composition, and packaging partially do not have a significant effect on the consumers' buying decision of Company X's crystal herbal beverages.

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