# ANALYSIS OF FACTORS INFLUENCING CONSUMER DECISIONS IN BUYING COOKING OIL IN GALANG CITY, DELI SERDANG REGENCY NORTH SUMATERA

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**Abstract**

*Galang City is a trading center in Galang sub-district which has experienced an increase in cooking oil prices, cooking oil shortages and panic buying cooking oil since October 2021. This condition makes the people of Galang City reconsider buying the type of cooking oil that they will consume, who originally bought packaged cooking oil now switch to buy bulk cooking oil. The research aims to analyze the factors influencing customer decisions and analyze customer opportunities for bulk and packaged cooking oil in Galang City, Deli Serdang district, North Sumatra. This research is located in Galang City and will be carried out from January to February 2023. Sampling was carried out using the accidental sampling method and number of samples was determined using the Slovin formula technique with a sample result of 96 respondents. The analytical method used in this research is the binary logistic analysis method which will be processed using Microsoft Excel and SPSS16. The result of this research is that the variable price of cooking oil has a significant effect on customer decisions in purchasing cooking oil. While the variables age, education, income, and number of family members do not have a significant effect on consumer decisions in purchasing cooking oil. In addition, the variables age, education, income, and number of family members are positive coefficients. While the price of cooking oil is worth a negative coefficient.*

***Keywords: consumer behavior, cooking oil, factor analysis, binary logistics, purchasing decisions***

## INTRODUCTION

Indonesia is an agricultural country that has natural resources and extensive land availability so that it can support all agricultural activities. Of the many results of agricultural activities in Indonesia, palm oil is one of the plantation commodities that has a very important role in the country's foreign exchange earnings. Palm oil and its derivative products have a higher competitive value compared to other oil-producing plants. In addition, palm oil also has lower production costs. One of the derivative products made from palm oil is cooking oil.

Cooking oil is one of the nine staple foods consumed by almost all Indonesian people, both in urban and rural areas (Yuarini et al., 2018). Cooking oil is also one of the basic necessities of the Indonesian people used in everyday life which is closely related to health. Cooking oil functions as a medium for conducting heat, adding savory flavors, adding nutritional value from calories in food ingredients (Indayani, 2021).

Cooking oil consumed by Indonesian people is mostly vegetable cooking oil with palm oil as the raw material. Cooking oil using palm oil as the raw material in Indonesia is divided into two, namely bulk cooking oil and packaged cooking oil. Bulk cooking oil is cooking oil that is sold to the market without using a brand and label measured in kilogram mass units (kg). Meanwhile, packaged cooking oil is cooking oil that is sold to the market using a brand and label which is usually packaged in plastic bottles and jerry cans measured in liter volume units (ltr) (Martino & Irda, 2022). Bulk cooking oil and packaged cooking oil are both processed products from industrial processes, but there are differences in terms of quality. The quality of these two cooking oils is due to the differences in the stages of the production and manufacturing process. Bulk cooking oil only goes through one filtering process, is cloudy yellow or pale yellow white, and is distributed in non-packaged form. Meanwhile, branded cooking oil goes through three to four filtering processes, is

clear yellow, and is packaged with a certain label or brand (Maulana et al., 2017). In addition, bulk cooking oil contains higher levels of fat and oleic acid than packaged cooking oil, making it less healthy for consumption. The distribution of bulk cooking oil from factories to retailers has a long distribution chain, so it is feared that the hygienic aspects of bulk cooking oil are less than ideal and inadequate for consumption (Zefanya & Yunita, 2022). At the end of 2021, there was a problem of scarcity and a spike in the price of cooking oil which caused unrest among the Indonesian people (Afrizal et al., 2022). Therefore, the government issued a policy to address this problem. The specific availability of national bulk cooking oil can reach 200 million liters per month. Based on data from the Bulk Cooking Oil Information System (SIMIRAH), it shows that in May 2022, the distribution of subsidized bulk cooking oil in May 2022 had reached 120,290.28 tons, or met 61.8% of the national monthly need of 194,634 tons. It is hoped that the availability of cooking oil can meet the cooking oil consumption needs of the Indonesian people and also stabilize the price of cooking oil in Indonesia (Ministry of Industry, 2022).

Table 1. Average consumption of cooking oil per capita per week in Indonesia in 2019-2021

| Year | Amount of Cooking Oil Consumption (Liter/Capita/Week) |
|---|---|
| 2019 | 0.227 |
| 2020 | 0.242 |
| 2021 | 0.253 |

Source: Expenditure for consumption of Indonesian population, BPS Indonesia

Based on Table 1, the development of cooking oil consumption in Indonesia has increased over the past three years. Cooking oil consumption in Indonesia in 2019 was 0.227 liters/capita/week. In 2020, cooking oil consumption in Indonesia increased by 0.242 liters/capita/week. Cooking oil consumption in Indonesia in 2021 increased again by 0.253 liters/capita/week. The price of cooking oil in Indonesia has increased sharply in recent years, especially at the end of 2021, due to the scarcity of cooking oil at that time. Then the government through the Ministry of Trade issued

Table 2. Average national cooking oil price in 2019-2022

| No. | Month | Price Cooking Oil (Rp/Lt) | |
|---|---|---|---|
| | | Rainfall | Packaging |
| 1 | 2019 | 10,600 | 14,500 |
| 2 | 2020 | 11,700 | 14,800 |
| 3 | 2021 | 14.100 | 16,400 |
| 4 | 2022 | 17,140 | 22,948 |

Source: SP2KP (processed by PDSI, Secretariat General of the Ministry of Trade)

Based on Table 2, the average price of national bulk and packaged cooking oil throughout 2019 to 2022 has a high price difference, where the price of packaged cooking oil is relatively more expensive when compared to bulk cooking oil. The price of bulk cooking oil and national packaged cooking oil in the last four years has tended to increase. When viewed from the average price of bulk oil in 2022 of IDR 17,140 per liter, this amount is IDR 3,140 more expensive than the HET determined by the government. Meanwhile, the average price of packaged oil in 2022, the price of the oil is IDR 22,948 per liter.

Table 3. Average consumption of cooking oil per capita per week in Deli Serdang Regency in 2018-2021

| Year | Cooking Oil Consumption (Liter/Capita/Week) |
|---|---|
| 2018 | 0.264 |
| 2019 | 0.292 |
| 2020 | 0.298 |
| 2021 | 0.297 |

Source: Statistics on People's Welfare of Deli Serdang Regency, BPS

Based on Table 3, in the last four years, the average consumption of cooking oil in Deli Serdang Regency has tended to increase. However, the average consumption of cooking oil in Deli Serdang Regency in 2021 experienced a slight decrease of 0.001 liters/capita/week from the previous year. The price of bulk and packaged cooking oil in Deli Serdang Regency has also increased every year. Because of this, in accordance with the regulations issued, the policy on the Highest Retail Price (HET) in March 2022, where the price of bulk cooking oil is IDR 14,000 per liter or IDR 15,500 per kilogram. The following is a breakdown of the prices of bulk cooking oil and packaged cooking oil from 2019 to 2022 in Deli Serdang Regency.

Table 4. Average price of cooking oil in Deli Serdang district 2019-2022

| No. | Year | Cooking Oil Price (Rp/Lt) | |
|---|---|---|---|
| | | Rainfall | Packaging |
| 1 | 2019 | 10,500 | 14,700 |
| 2 | 2020 | 11,500 | 15.100 |
| 3 | 2021 | 14,000 | 16,500 |
| 4 | 2022 | 16,300 | 22,800 |

Source: SP2KP (processed by PDSI, Secretariat General of the Ministry of Trade)

Based on Table 4, the price of bulk cooking oil and packaged cooking oil in Deli Serdang Regency throughout 2019 to 2022 has a high price difference, where the price of packaged cooking oil is relatively expensive compared to bulk cooking oil. The price of bulk cooking oil and packaged cooking oil in Deli Serdang Regency in the last four years has tended to increase. The average price of bulk cooking oil in 2022 is IDR 16,300 per liter, which is IDR 2,300 more expensive than the HET determined by the government. Meanwhile, the average price of packaged cooking oil in 2022 is IDR 22,800 per liter. Galang City is a city located in Galang District, Deli Serdang Regency. The city, which is the center of trade in Galang District, also experienced an increase in the price of cooking oil, a shortage of cooking oil, and panic buying of cooking oil, just like other cities that occurred in October 2021.

Based on information obtained from the results of initial interviews with several grocery stores that sell cooking oil and several people who consume bulk cooking oil and packaged cooking oil, it is known that the stock of cooking oil, especially packaged cooking oil, is lacking, but the level of public demand for both cooking oils has recently been high. This condition makes people in Galang City restless, especially for people from the lower middle class, because before the shortage and panic buying of cooking oil, the price of cooking oil was stable, the availability of cooking oil stocks was stable so that people preferred packaged oil. However, this condition changed after the price of packaged cooking oil rose very high, which was originally IDR 16,000 per liter to IDR 22,000 per liter, causing people in Galang City to reconsider buying cooking oil and switch to bulk cooking oil. However, there are still people in Galang City who continue to consume packaged cooking oil even though it is difficult to obtain and the price is high. On the other hand, there are also people in Galang City who consume bulk cooking oil from before the shortage and increase in the price of cooking oil occurred.

## LITERATURE REVIEW

### Consumer Behavior

Consumer behavior is the process through which a person/organization searches for, buys, uses, evaluates, and disposes of products or services after consumption to meet their needs. Consumer behavior is the process of decision-making and individual physical activities involved in the process of evaluating, obtaining, using or using goods or services. Consumer behavior consists of two stages, namely purchasing decisions and consumer loyalty decisions (Wigati, 2011).
Definition Price

### Understanding Purchasing Decisions

Purchasing decisions are a process in which consumers make an assessment of the alternatives needed based on certain considerations in choosing one or more alternatives needed based on certain considerations in purchasing (Schiffman & Kanuk, 2008).

### Binary Logistic Regression

Logistic regression or also known as the logit model, is an analysis method used to see the relationship between dependent and independent variables, where the dependent variable is categorical. There are two types of models in logistic analysis, namely binary logistic regression and multinomial logistic regression. Binary logistic regression is used when the dependent variable of the data is dichotomous. While the multinomial logistic regression model is used when the dependent variable used consists of more than two categories (Ndangi et al., 2019).

### Cooking oil

Cooking oil is a food ingredient derived from vegetable materials with or without chemical changes or including hydrogenation, cooling and has gone through a refining or purification process used for frying (Lempang, 2016). In addition, cooking oil is one of the ingredients included in fat, both from plant fat and animal fat or made synthetically (Indayani, 2021).

### Hypothesis

The results of the research hypothesis are that the variables of age, education, income, number of family members, and price of cooking oil have a significant influence on consumer decisions in purchasing cooking oil in Galang City, Deli Serdang Regency, North Sumatra.

## METHOD

### Location, Objects and Scope of Research

This research was conducted in Galang City, Deli Serdang Regency, North Sumatra. The selection of the location was done intentionally (purposive sampling) with the consideration that the city is the main center of the community's economy in the Galang District area. The object of this research is household consumers who buy cooking oil in Galang City. The scope of this research is limited to the analysis of factors that influence consumer decisions in buying cooking oil in Galang City, Deli Serdang Regency, North Sumatra.

### Data Types and Sources

The types of sources and data used in this study are primary and secondary data. Primary data were obtained through interviews and direct observations at the research location as well as interviews with consumers who consume bulk and packaged cooking oil with a questionnaire guide. Secondary data were obtained from literature such as books, journals, final assignments (thesis), BPS, and literature related to the material of this study.

### Population and Sample

The population in this study were household consumers in Galang City who bought cooking oil, both in bulk and in packaging. The sampling technique method in this study was

carried out using the Accidental Sampling method. Accidental Sampling was carried out because consumers who consumed bulk cooking oil and packaged cooking oil in Galang City were not recorded. In addition, each respondent who wanted to be interviewed was not previously determined. The number of samples taken in this study will be calculated using the Slovin formula technique. The Slovin formula for determining the sample is as follows (Umar, 2011):

$$n = \frac{N}{1+N(e)2}$$

Information :
N= sample size/number of respondents
N = population size
e = percentage of allowance for sampling error accuracy that can still be tolerated (e value = 0.10 or 10%)

The number of household consumer population in Galang City based on BPS Galang District is 2662 households with an error rate of 0.10, so the sample size in this study is:

$$n = \frac{N}{1+N(e)2}$$

$$n = \frac{2662}{1+2662(0,1)2}$$

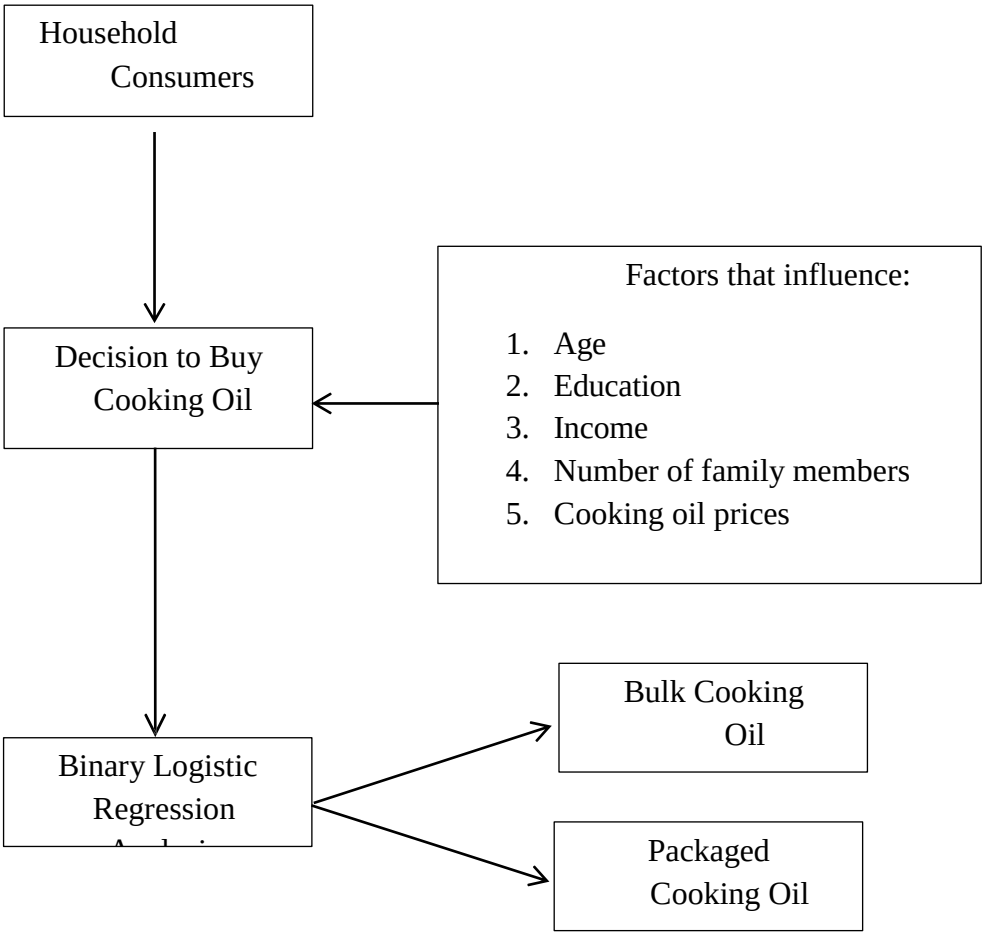
n = 96, 37≈ 96

Based on the calculation results above, the number of samples determined in the study was 96 samples.

**Data Analysis Methods**

The data analysis method used to analyze the factors that influence consumer decisions in purchasing cooking oil in this study is using the Binary Logistic analysis method (logit). This is because the dependent variable (buyers/users of cooking oil) is divided into two categories, namely bulk cooking oil and packaged cooking oil. The data from this study will later be analyzed and processed with the help of Microsoft Excel and SPSS 16.

**Framework of Thinking**




**RESULT AND DISCUSSION**

**Regression Model Suitability Test**

**Hosmer and Lemeshow Test**

This test is a test used to determine whether the proposed regression model is accepted or not. The test results of this test can be seen by comparing the significant value with α (0.10). The following are the results of the Hosmer and Lemeshow test in this study.

Table 5. Results of the Hosmer and Lemeshow test

| Step | Chi-square | Df | Sig. |
|---|---|---|---|
| 1 | 8,367 | 8 | .659 |

Source: SPSS16 Output Results

Based on Table 5, it can be concluded that the results of the Hosmer and Lemeshow test show a significant value of 0.659, which is greater than α (0.10). This means that the model is able to predict its observation value or it can be said that the model is acceptable because it matches the observation data.

**Nagelkerke R Square Test (Determinant Coefficient Test)**

The Nagelkerke R Square test is a test conducted to determine how much the independent variable is able to explain and influence the dependent variable. The following are the results of the Nagelkerke R Square test in this study.

Table 6 Nagelkerke r square test results

| Step | -2 Log likelihood | Cox & Snell R Square | Nails R Square |
|---|---|---|---|
| 1 | 22.925a | .674 | .907 |

Source: SPSS16 Output Results

Based on Table 6, it can be concluded that the Negelkerke R Square test results show a value of 0.907. This means that the independent variables (age, education, income, number of family members, cooking oil price) can explain what happens to the dependent variable (consumer decisions) by 90.7%, while the remaining 9.3% is explained by other variables outside the model.

**Hypothesis Testing**

**Simultaneous Test (overall test/ G test)**

Simultaneous test or simultaneous test is used to determine the effect of all independent variables on the dependent variable from within the regression model. The following are the results of the simultaneous test in this study.

Table 7 Results of simultaneous test (overall test/ g test)

| | | Chi-square | Df | Sig. |
|---|---|---|---|---|
| Step 1 | Step | 107,480 | 5 | .000 |
| | Block | 107,480 | 5 | .000 |
| | Model | 107,480 | 5 | .000 |

Source: SPSS16 output results

Based on Table 7, it can be concluded that the results of the simultaneous test have a chi-square value of 107.480 with a degree of freedom of 5 and a significance value of 0.000 < α (0.10), which means that the independent variables (age, education, income, number of family members, price of cooking oil) simultaneously have a significant effect on the dependent variable (decision to purchase cooking oil).

**Partial Test (Wald Test)**

Partial test is used to determine the effect of each independent variable on the dependent variable. This test is done by comparing the significant value with the α value of 0.10. If the significant value is smaller than alpha, there is a significant effect of the independent variable (X) on the dependent variable (Y). The following are the results of the partial test in this study.

Table 8 Partial test (wald test)

| | | B | SE | Wald | df | Sig. | Exp (B) |
|---|---|---|---|---|---|---|---|
| Step 1a | X1 | .031 | .061 | .251 | 1 | .616 | 1,031 |
| | X2 | .056 | .311 | .033 | 1 | .856 | 1,058 |
| | X3 | .000 | .000 | .276 | 1 | .599 | 1,000 |
| | X4 | .185 | .541 | .117 | 1 | .732 | 1.203 |
| | X5 | -.004 | .001 | 19,081 | 1 | .000 | .996 |
| | Constant | 60,962 | 12,822 | 22,605 | 1 | .000 | 2.988E26 |

Source: SPSS16 output results

Based on Table 8, it can be concluded that of the five independent variables tested, there is

1 variable that has a significant effect on consumer decisions in purchasing cooking oil at α of 0.10, namely: the price of cooking oil (X5), while the other 4 variables, namely age (X1), education (X2), income (X3), and number of family members (X4) do not have a significant effect on consumer decisions in purchasing cooking oil.

**Age (X1)**

Based on the results of the analysis in Table 8 of this study, it shows that the age variable (X1) has a positive coefficient with an odds ratio value greater than 1. This means that the older the consumer, the more likely the consumer is to buy bulk cooking oil as much as 1.031 times. However, the age variable (X1) does not have a significant effect on consumer decisions in buying cooking oil (Y) with a significance value of 0.616 > α (0.10).

The results of this study are not in line with the research conducted by Safrida et al. (2020), stating that the age variable has a negative coefficient value and the odds ratio value is less than 1. Based on the results of this study, the age variable does not have a significant effect on the decision to purchase cooking oil because respondents in this study usually buy cooking oil regardless of their current age, both productive and unproductive. Although respondents who are no longer productive rarely cook because there are other parties, such as children or relatives from outside the respondent's home environment, who will cook for them, they will still buy cooking oil because it is their daily need.

**Education (X2)**

Based on the results of the analysis in Table 8 of this study, it shows that the education variable (X2) has a positive coefficient value with an odds ratio value greater than 1. This means that consumers who have a high education are 1.058 times more likely to buy bulk cooking oil compared to consumers who have a low education. However, the education variable (X2) does not have a significant effect on consumer decisions (Y) in buying cooking oil with a significance value of 0.856> α (0.10). The results of this study are not in line with Husna et al. (2019), which states that the education variable has a negative coefficient value with an odds ratio value less than 1. Based on the results of this study, the education variable does not have a significant effect on the decision to purchase cooking oil because respondents will buy cooking oil because they see the amount of oil and the quality of the oil. However, most respondents buy cooking oil based on the amount of oil they get in one purchase. This is because most respondents think that both types of cooking oil currently have the same quality.

**Income (X3)**

Based on the results of the analysis in Table 8 in this study, it shows that the income variable (X2) has a positive coefficient value with an odds ratio value greater than 1. This means that consumers who have high incomes are 1,000 times more likely to buy bulk cooking oil compared to consumers who have low incomes. However, the income variable (X3) does not have a significant effect on consumer decisions in buying cooking oil with a significant value of 0.599> α (0.10). The results of this study are in line with the research of Dewi and Hartono (2015), which states that the income variable has a positive coefficient and an odds ratio value greater than 1. This means that consumers who have high incomes are 1,001 times more likely to buy organic vegetables compared to consumers who have low incomes. However, the results of the significant value of this study are not in line with the research conducted by Kamila et al. (2019), which states that the income variable has a significant effect on rice purchasing decisions in Salatiga City.

**Number of Family Members (X4)**

Based on the analysis results in Table 8 of this study, it shows that the variable number of family members (X4) has a positive coefficient and the odds ratio value is greater than 1. This means that consumers who have a large number of family members are 1.203 times more likely to buy bulk cooking oil compared to consumers who have a small number of family members.

However, the variable number of family members (X4) is not significant to consumer decisions in buying cooking oil with a significant value of 0.732 > α (0.10). The results of this study are in line with the research of Husna et al. (2019), which states that the variable number of family members has a positive coefficient and the odds ratio value is greater than 1. Based on the results of this study, the variable number of family members does not have a significant effect on the decision to purchase cooking oil because most respondents usually buy cooking oil not because of the number of family members, but they buy cooking oil based on how much cooking oil will be used each week. Respondents will only increase the amount of cooking oil they will consume when there are events or big days such as Eid and Christmas.

**Cooking Oil Price (X5)**

Based on the analysis results in Table 8 of this study, it shows that the variable price of cooking oil (X1) has a negative coefficient value with an odds ratio value of less than 1. This means that if the price of bulk cooking oil increases, the chances of consumers buying bulk cooking oil are 0.996 times greater than if the price of bulk cooking oil decreases. The variable price of cooking oil (X1) has a significant effect on consumer decisions in buying cooking oil (Y) with a significance value of 0.000 <α (0.10).

The results of this study are not in line with the research conducted by Safrida et al. (2020), which states that the price variable has a positive coefficient value with an odds ratio value greater than 1. Based on the results of this study, the price variable has a significant effect on consumer decisions in purchasing cooking oil because respondents or people in Galang City tend to buy more bulk cooking oil than packaged cooking oil when it comes to the price of the cooking oil itself. This is because the price of bulk cooking oil is cheaper when compared to packaged cooking oil. Although recently there was a brand of packaged cooking oil that had the same price, most respondents there still chose bulk cooking oil because they could get a larger amount in one purchase at a low price. In addition, respondents will reconsider the amount of cooking oil they will buy and they will reduce the amount of cooking oil they will buy if the price of cooking oil increases.

## Conclusion

Based on the results of simultaneous analysis (G test) of the variables age (X1), education (X2), income (X3), and number of family members (X4), the price of cooking oil (X5) all have a significant effect on consumer decisions in buying cooking oil. Partially (Wald test) only one variable has a significant effect on consumer decisions in buying cooking oil (Y), namely the price of cooking oil (X5). While other variables such as age (X1), education (X2), income (X3), and number of family members (X4), are not significant on consumer decisions in buying cooking oil (Y). The results of the study of consumer decision opportunities in purchasing cooking oil based on the interpretation of the odds ratio, the variables of age (X1), education (X2), income (X3) and number of family members (X4) have a positive coefficient which means that consumers are more likely to buy bulk cooking oil as much as 1 times. While the interpretation of the odds ratio on the variable of cooking oil price (X5) has a negative coefficient which means that consumers are more likely to buy bulk cooking oil as much as 0 times.

**Suggestion**

The suggestion is for consumers or housewives who will consume cooking oil, they should choose to buy packaged cooking oil. This is because packaged cooking oil is better, especially in terms of a more practical product, and also healthier when consumed by the family compared to bulk cooking oil. If the price of cooking oil is an obstacle, currently there are packaged cooking oil products that are cheaper, even the price is almost the same as the price of bulk cooking oil. In addition, companies that produce cooking oil should continue to pay attention to the amount of production and the amount of cooking oil needed by consumers so that the supply and price of cooking oil, especially in Galang City, remain stable.

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