Analysis effect the price of the demand for chicken eggs in Biringkanaya district

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Abstract. The demand for eggs in this study is influenced by several factors, namely the price of the item itself, the price of the substitute items. The consumption of animal protein is the most popular among the Indonesian population, among which are purebred chicken eggs. In addition to being easy to obtain, prices are also more affordable for all levels of society. This research was aimed to analyze the effect of chicken egg price, broiler meat price, and tempe price on the demand for chicken eggs of residential consumers in the sub-region of Biringkanaya district in Makassar city. The research method being employed in this study was a survey method. Sampling was conducted through a cluster random sampling method; the data collected included the primary data from 60 household respondents through observations, interviews, and questionnaires, then the data obtained will be analyzed using Multiple Linear Analysis using a computer program of Statistical Solution of Products and Services. The results of this study showed that the independent variables are the price of chicken eggs, broiler meat price and tempe price significantly affected the demand for chicken eggs. While partially that each of the price chicken eggs and broiler meat price is significantly affected, but tempe price is not significantly affected for the demand of chicken eggs.

1. Introduction
The strategic role of the livestock sub-sector, which is part of the agricultural sector as a provider of animal protein, is essential for the growth and development of the human body. The livestock sector is the main supplier of food to support the consumption needs of animal protein. Chicken eggs of agribusiness as a chicken egg supplier has a profitable business opportunities and is growing as many people in the community need chicken eggs. The downstream sub-sector of agribusiness, which is market products that involve individuals or companies that process and handle of agricultural products to the final consumer (households), at this time eggs from Indonesia are requested to reach the international market. Chicken eggs are one of the most popular types of eggs consumed by the Indonesian people.

The city of Makassar is one of the largest cities in Indonesia. Its population is estimated at 1,489,011 inhabitants in 2017, with a population growth of 1.32%. Biringkanaya District is the most population district of Makassar City, with a population of 208,436, while the least population Sangkarrang District has 13,703 inhabitants [1]. The larger population is assumed that the more
population the more food consumption for the needs of life will also increase. Biringkanaya District has one of the biggest traditional markets in Makassar, the Daya market, as a place of sale for domestic purposes, including the need for protein sources such as chicken eggs.

The development of the price of chicken eggs in Makassar city has showed fluctuations in 2014 to 2017. In addition, the high and low incomes of the community will affect the quality and quantity of demand for an item. Lifestyle change of population that prioritize health also affect the demand for food that has high nutrition especially animal protein, which is easily obtained for example chicken eggs. Chicken eggs are one of the most popular sources of animal protein foods in the community because of their high protein content and the spread of their eggs to make them easy to obtain.

The chicken eggs in the city of Makassar have prices that fluctuate during the month or at times that have become a tradition in Indonesia, such as the celebration of religious holidays and other holidays every year. The level of income per capita really determines the purchasing power of people, both their basic needs and other needs of a household. The increase in per capita income in Makassar is not accompanied by an increase in the consumption of chicken eggs. The consumption of chicken eggs has fluctuated and has resulted the consumption of protein in the community far below he level of protein adequacy. Therefore, research effect the price of the demand for chicken eggs is needed to describe the demand for chicken eggs in Biringkanaya District in Makassar.

2. Methodology

The type of research used is exploratory quantitative research using a survey method. Data collection was conducted from July to August 2019. According to Sugiyono [3], quantitative research methods can be interpreted as a research based on the philosophy of positivism, used to examine specific populations or samples, sampling techniques being generally performed randomly, the collection of data using research instruments, quantitative or statistical data analysis to test a predetermined hypothesis. Determination of the location of the study was conducted purposively in the Biringkanaya sub-district of Makassar city, considering that Biringkanaya Subdistrict was the district with the largest population in the city of Makassar [1], and there was one of the largest traditional markets in Makassar, that is Pasar Daya, so that the sale of eggs at this location could potentially serve as a research site.

The population of this research is 44,584 households living in Makassar's Biringkanaya sub-district [2]. An excessively large population will be sampled, which is considered representative of the existing population. The determination of the sample using the cluster random sampling method is a regional sampling technique used to determine the sample when the object to be examined is very large, for example residents of a country, a province or district [3]. The research respondents were 60 households from 3 villages that could represent the population. The appropriate sample size in the study is between 30 to 500 [3]. Primary data were obtained through observations, questionnaires and interviews with household respondents to measure the extent of the influence of chicken egg price, price of broiler meat, and Price of Tempe on demand for chicken eggs at the study site. The analysis of the data used in this study is a (parametric) induction statistic with a range of interval data and test hypotheses. The induction statistic in question is multiple linear regression, which is an independent variable model dependent on two or more independent variables. The multiple regression model can be written as follows [3]:

\[ Y = a + b_1X_1 + b_2X_2 + b_3X_3 + e \]  (1)

where \( Y \) = demand of chicken eggs (shelves/month), \( a \) = a constant, \( b \) = regression coefficient, \( X_1 \) = chicken eggs price (IDR/month), \( X_2 \) = broiler meat price (IDR/month), \( X_3 \) = tempe price (IDR/month), \( e \) = Standard Error (5%).

Data analysis is used the statistical solution program for products and services and tests the hypothesis.
3. Result and Discussion

3.1. Analysis of demand for chicken eggs (Y)

Multiple linear regression results based on the analysis of independent variables (chicken eggs price, broiler meat price, tempe price) have a significant effect on the dependent variable, namely: the demand for chicken eggs. The results show in the multiple linear regression table that the calculated F value is 64.305 higher than the 1.96 F table value based on these figures; therefore, it can be interpreted that, together, the independent variables have a significant effect on egg demand as a dependent variable at the 0.05 level of confidence.

In contrast, the R² value of 0.77 indicates that 77% of the affected by the chicken eggs price, broiler meat price and tempe price on fluctuations remaining% being affected by other factors outside the model used in this study.

Table 1. Summary of the results of the multiple linear regression analysis.

| Variable          | Coef of Regression | T count | Sig   |
|-------------------|--------------------|---------|-------|
| Chicken Eggs price (X₁) | 1,704             | 12,460  | 0,000 |
| Broiler Meat Price (X₂) | 4,767             | 2,207   | 0,031 |
| Tempe Price (X₃) | -5,120             | -0,956  | 0,343 |

\[ F_{hitung} : 64,305 \]
\[ Adjusted R^2 : 0.763 \]
\[ R : 0.880 \]
\[ Standard error : 0.429 \]
\[ R^2 : 0.775 \]
\[ Signifikansi : 0.000 \]
\[ Constanta : 0.588 \]

Source: Primary data processed, 2019.

From Table 1, we can see that each regression coefficient of the independent variable can be formed in the following equation:

\[ Y = 0.175 + 1.704X_1 - 4.767X_2 - 0.956X_3 \]

This equation can be explained as follows: a constant value of 2.358 indicates that if the chicken eggs price (X₁), broiler meat price (X₂) and tempe price (X₃) are constant, the demand for chicken eggs will be 0.588. In addition to the factors used in the research equation or model, there are other variables that affect the demand for chicken eggs.

3.2. Chicken Eggs Price (X₁)

The coefficient of regression of the variable chicken egg price (X₁) equal to 1.704 means that the purchase chicken eggs price has a positive effect, which means that if chicken eggs price increased by 1%, the demand for chicken eggs will increase by 1.704%. According to the results of the calculations obtained, the 12.460> count of the table of 2.003 shows that the variable chicken eggs price has a significant effect on the demand for chicken eggs.

On the basis of the results obtained, it can be said that the quantity demanded for an article is related to the price of the article. When the price of a product is high, only a few people are willing and able to buy it. As a result, the number of products purchased is low. When the price of the product falls, more and more people are willing and able to buy, so that the number of products purchased is more and more important [4].

3.3. Broiler Meat price (X₂)

The variable regression coefficient for the broiler meat price (X₂) of 4,767 means that the broiler meat price has a positive effect, which means that if the price of broiler meat increases of 1%, the demand for flesh eggs will decrease by 4,767%. The resulting calculation results calculated as 2.207> of the
table of 2.003 show that the variable price of chicken-flesh eggs has a significant impact on the demand for chicken eggs. Fluctuations in the prices of goods and services will affect much or at least the goods demanded by consumers. The quantity decreases when the price increases and the quantity demanded increases when the price decreases, it can be said that the quantity demanded is negatively correlated [5].

3.4. Tempe Price (X3)
The variable regression coefficient of tempe price (X3), equal to -5.120, means that the purchase price of chicken eggs has a negative effect, which means that if the price of the chicken decreased by 1%, the demand for chicken eggs will decrease by 5.120%. Calculation results obtained calculated and equal to 0.956> of the table of 2.003 show that the variable price of chicken eggs has no significant effect on the demand for chicken eggs. This is consistent with research [6], according to which the price of the tempe as a substitute article has in part no significant effect on the demand for chicken eggs. The model above can be seen in the following picture.

![Diagram](image)

**Figure 1.** Demand for chicken eggs and price factors affecting them in Biringkanaya District, Makassar.

4. Conclusion
Independent price variables for chicken eggs, meat price and tempe price have a significant affected on the demand for chicken eggs, while partially that each of the price chicken eggs and broiler meat price are significantly affected, but tempe price are not significantly affected for the demand chicken eggs. The contribution of chicken egg price, meat price and tempe price to the demand for chicken eggs is 77%.

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