

Study of Tempe Demand in the City of Lhokseumawe

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ABSTRACT

Soybean is kind food product made from soy materials. It is consumed as the substitution food and snack. Because of high nutrient content and good flavor, soybean becomes one of high demand food every year and it is able to adapt with the consumer preference development. Commonly, the increasing of the price, actually both of fish and beef cause the consumer give the preference to soybean. The research purposes to find out variables that influence the amount of demand and the concern of demand caused by the influence variable changing. The method of analyzing is double logarithm function while the co efficiency regression directly is elasticity co efficiency from each variable. The result of research shows that the soybean product is still under market interest. The obvious variable that influences soybean demand is the education of housewife otherwise the variable both of soybean price and fish price have given the influence of demand obviously. The relationship between the soybean demand and housewife education is more awareness of soybean nutrient that is kept consuming as both of substitution food and snack.

INTRODUCTION

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Soybeans contain 35% protein even in superior varieties the protein content can reach 40-43%. Compared to rice, corn, cassava flour, green beans, meat, fresh fish, and chicken eggs, soybeans have a higher protein content, almost equal to the protein content of dry skim milk. The process of processing soybeans into tempeh is generally a simple process, and the equipment used is sufficient with tools commonly used in households, except a peeler machine.

Tempe is a processed product made from soybeans. Consumed as a substitute for side dishes and snacks. High nutritional value and good taste cause the demand for tempeh to increase every year. Nationally, in 1984-1993 consumption of tempeh increased by an average of 3.7%/year. During this period, Purwanta (1996) noted that an increase in income led to an increase in demand for tempeh because tempeh was no longer an inferior product, and demand in cities was higher than in villages. Tempe consumption patterns differ between regions. For the people of Aceh, tempeh is only an additional complementary food from the staple food menu. This is due to the consumption pattern of the Acehnese people who prefer to consume fish as a side dish rather than tempeh. In addition, tempeh is also consumed as a snack. Unlike the people on the island of Java, tempeh is the main requirement as a side dish and there is a fairly high dependence on tempeh. So that it can be ascertained, the demand for tempeh on the island of Java is higher than the demand for tempeh in Nanggrou Aceh Darussalam. However, the study of tempeh is increasingly interesting to study, considering that this product has a high nutritional value and the demand is relatively high, given the high prices of fish and meat in Nanggrou Aceh Darussalam, especially in Lhokseumawe City.

It is estimated that the demand for tempeh will continue to increase. This is due to public awareness of the high health benefits of tempeh. The Director General of Community Nutrition and Nutrition Research Center of the Ministry of Health of the Republic of Indonesia (1991) revealed that every 100 grams of edible ingredients from tempe products contains 201 calories of calories, 20.80 grams of protein and 8.80 grams of fat. The content of other nutrients is carbohydrate, calcium, phosphorus, iron and carotene and vitamin B1. The fermentation process causes tempeh nutrients to be easily utilized by the body and produces several enzymes needed in digestion (Hermana et. al. 1996). The nutritional content of tempe as a processed soybean food ingredient is: 149 cal of calories, 18.3 g of protein, 4.0 g of fat, 10.7 mg of carbohydrates, 129 mg of calcium, 154 mg of phosphorus, 10.0 mg of iron, vitamins A 50 IU, Thiamin 0.17 mg, and water 64.0 gr (Koswara, 1992).

Consumer awareness of the nutritional value and taste will dominate the consumption pattern of a product. This is also related to the low level of income and the declining purchasing power of the people. The general increase in prices, especially the price of fish and meat, causes consumers to prefer tempeh as a side dish. Thus, it is necessary to conduct a more in-depth study of the factors that influence the demand for tempeh and the sensitivity of the demand for tempe in traditional markets in order to determine anticipatory steps towards the production and marketing of tempeh in Lhokseumawe City.

Tempe demand analysis was carried out based on the econometric concept expressed in the form of a logarithmic function with constant elasticity (Koutsoyiannis, 1975). With this function can be known the factors that affect the demand for tempe and its elasticity. Tempe demand is the amount of tempeh demanded by consumers at a certain price, place and time, the factors that influence the demand for this tempe are tempeh prices, meat prices, fish prices, income, number of family members and housewife education. The tempe demand study is expected to represent a study of the demand for processed products with high nutritional value in order to encourage the growth and development of the processed food agroindustry in Lhokseumawe City.

LITERATURE REVIEW

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METHODOLOGY

Determination of Research Location

This research was conducted in Lhokseumawe City, Nanggroe Aceh Darussalam Province. The location determination was carried out purposively, with the consideration that this location is the most densely populated area and the level of consumer income is quite varied and the consumption power is relatively high compared to the districts/cities in the Nanggroe Aceh Darussalam region.

Data collection technique

The data needed in this study can be grouped into two types, namely secondary data and primary data. Secondary data is collected from documentation at various relevant agencies including BPS (Central Statistics Agency), internet, mass media, and various other official data sources. Data collection was carried out by field observations and using structured questionnaires. Data were collected from tempe consumer households in Lhokseumawe City. Sampling from each tempe agent was carried out randomly stratified based on the number of tempeh requested, as many as 40 samples.

Data collected from consumers as variables that influence the demand for tempeh are: household income, number of families, education of housewives, tempeh prices, meat prices, and fish prices, which were valid in April 2007. Household income data using the approach expenses for one month.

Analysis Model

The analytical model used is a linear function in logarithms (double logarithmic function) where the regression coefficient is directly the elasticity coefficient of each variable.

$$\text{Log } Y = \log a + b_1 \log x_1 + b_2 \log x_2 + b_3 \log x_3 + b_4 \log x_4 + b_5 \log x_5 + b_6 \log x_6 + b_7 \log x_7$$

Information :

Y = the quantity of tempeh demanded by households.

a = intercept

b = regression coefficient as the coefficient of elasticity of demand for each variable.

x1 = household income

x2 = number of family members

x3 = housewife education

x4 = price of tempe

x5 = price of beef

x6 = price of chicken meat

x7 = price of fish

Considering that tempeh is a substitute product for side dishes for the people of Lhokseumawe City, to determine the factors that influence the demand for tempeh, data on fish prices and meat prices are used. For the price of fish, it is limited to the price of tuna, because the demand is relatively high compared to other fish in the traditional market of Lhokseumawe City.

RESULT AND DISCUSSION

Description of Sample Household

The descriptions of the sample households in this study include age, education, number of dependents in the family, type of work and total household income. A person's age affects his decisions and physical activity abilities. Age is clearly related to taste and the type of food consumed. As a person gets older, the desire to consume food tends to decrease. This will greatly affect a person's ability to improve his work performance. The average age of the sample is 38.35 years, indicating that the sample is of productive age. Simanjuntak (1985) classifies productive age as those in the 15-55 year age group. In the productive age group, the consumption power is estimated to be relatively high (Table 1).

Table 1. Description of Sample Household

| Description | Range | | Average |
|-----------------------------|------------|--------------|--------------|
| | Lowest | Highest | |
| Age | 25,00 | 69,00 | 38,35 |
| Education | 6,00 | 17,00 | 11,53 |
| Number of Family Dependents | 2,00 | 15,00 | 5,13 |
| Household Income | 400.000,00 | 3.500.000,00 | 1.815.575,00 |

Source: Primary data (processed), 2021.

The education category includes formal education which is quantitatively measured by the number of years of education which is then equated with the stages of general education level. The data presented shows that the average education of the sample is 11.53 years old or equivalent to a General High School (SMU) education. This shows that the average sample has understood the importance of education. Based on age, the sample is quite selective in choosing consumer goods, including having a high taste, and being selective in choosing the price and quality of tempeh purchased.

The number of family dependents greatly determines the purchasing power of the sample for consumptive goods. The more the number of dependents in the family, the higher the consumption rate. If it is not supported by adequate household income, the sample will reduce the number of purchases, and this will also affect the consumptive pattern of the sample household. The number of dependents of the sample is an average of 5 people. This figure is relatively large when viewed from the average sample household income of Rp.1,815,575.00/month or per capita income of Rp. 363,115.00/month.

Tempe Production

The shape and packaging of the resulting tempe is different. Tempe packaging is done using banana leaves and plastic. Packaging of tempe with banana leaves is done because the price of banana leaves is cheaper, easy to obtain and contains a lot of water content so that the tempe produced is relatively better and tastier than soybeans packaged in plastic. However, packaging tempeh with banana leaves takes a relatively long time to select and clean the leaves, because the banana leaves used must be fresh and wide. Packaging with plastic is relatively easier, but the price of plastic is more

expensive. However, considering the time and need for a lot of labor, producers are more likely to choose tempeh packaging with plastic.

Tempe is packaged in the form of bars with banana leaf packaging measuring 15 cm x 25 cm with a selling price of Rp. 1000/piece and plastic packaging with 2 (two) consecutive sizes, small size 8 cm x 10 cm and large size 10 cm x 11 cm with a selling price of Rp. 667,00/piece and Rp. 1000/piece.

Tempe production is calculated in packs weighing 2 ounces per pack with a selling price of Rp. 666.67 per pack. In 1 kilogram of soybeans can be produced as much as 10 packs of tempe. The amount of tempe production fluctuates slightly but tends to increase every year. This is influenced by the availability of raw materials and high consumer demand for tempe.

Analysis of Factors Affecting Tempe Demand

The increase in demand for tempe is in line with the increase in population, both as consumers of fresh tempe and processed tempe products. Besides fresh tempeh, nowadays, tempeh processed products are developing, both as food with various processed forms and as snacks (snacks), which tends to expand the participation of new consumers outside of traditional consumers.

In Table 2, it can be seen that $R^2 = 0.880$, meaning that 88.0 percent of changes in tempe demand by households can be expressed by the explanatory variables used in the model, namely household income (X_1), number of family members (X_2), education of housewives (X_3), the price of tempeh (X_4), the price of beef (X_5), the price of chicken (X_6), and the price of fish (X_7). Meanwhile, another 12.0 percent is explained by variables that are not included in the model.

Table 2. Hasil Analisis Regresi Pendugaan Faktor-faktor yang Mempengaruhi Permintaan Tempe

Source: Appendix 1

| Endogenous Variable | Regression Coefficient | T-count |
|---------------------|---------------------------|---------|
| Intersep | -6.544* | -2.273 |
| X_1 | -0.175 | -1.635 |
| X_2 | 0.166 | 1.230 |
| X_3 | 0.894* | 2.398 |
| X_4 | -0.866** | -2.653 |
| X_5 | 0.265 | 0.783 |
| X_6 | 0.475 | 0.948 |
| X_7 | 1.704** | 4.653 |
| $R^2 = 0.880$ | $F_{count} = 33.524^{**}$ | |

The calculated F value is significant at 99 percent, this means that the explanatory variables used in the model, as a whole, show a significant relationship with the demand for tempe by households. Partially, the variables that have a significant effect on the demand for tempeh are the education of housewives, while the variables that have a

very significant effect on the demand for tempeh are the price of tempeh and the price of fish.

The relationship between the demand for tempeh and the education of housewives shows the high awareness of housewives about the nutritional value contained in tempeh, so that tempeh is still consumed as a substitute for side dishes and snacks.

The increase in tempe prices tends to reduce the demand for tempe. This is in accordance with the applicable law of demand. But so far, there has been no significant price change for tempeh because if there is an increase in the price of imported soybeans as raw material for tempeh, the craftsmen anticipate it by reducing the weight of tempeh in each package. This is because KOPTI is not functioning and craftsmen do not dare to increase the selling price of tempe unilaterally because it is feared that consumers will switch to buying tempe which is cheaper.

The fish price variable shows a substitution relationship with the demand for tempeh. The increase in fish prices causes consumers to tend to buy tempeh as a side dish. This is presumably due to the tradition of the people of Lhokseumawe City, as is the tendency of other Acehnese people to prefer to consume fish as a side dish compared to tempeh. The results also showed a tendency to consume tempeh as a side dish when the price of fish, beef and chicken increased, and only 17.5% of the sample bought tempeh for snacks.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

1. From the aspect of quantity, so far there has been no rejection of tempe by consumers or unsold tempe. This is an indicator that the tempe produced is still below the market absorption capacity. The purchasing power of the market will increase again if it takes into account the use for the processing needs of advanced products such as tempe chips and other snacks.
2. The variables that have a significant effect on the demand for tempeh are the education of housewives, while the variables that have a very significant effect on the demand for tempeh are the price of tempeh and the price of fish. The relationship between the demand for tempeh and the education of housewives shows the high awareness of housewives about the nutritional value contained in tempeh, so that tempeh is still consumed as a substitute for side dishes and snacks.

Recomendation

1. Given the high demand for tempe, it is estimated that the development of tempe is still a big opportunity. For this reason, it needs to be accompanied by a breakthrough in creating new tempe-based products that have a longer shelf life.
2. Local governments and related parties should encourage increased efforts to develop processed products because they can improve the quality and quantity of fresh products accompanied by certainty of selling prices at

the producer level, provide added value for craftsmen and increase the consumption rate of processed products at the consumer level.

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