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DEMAND FOR SOYBEAN OF TOFU SMALL SCALE AND HOME INDUSTRIES AND THEIR FEASIBILITY IN THE DISTRICT OF SEMARANG

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ABSTRACT

Semarang Regency is a center of tofu production using soybean as the raw material. This study aims to: (1) determine soybean suppliers on home industries and small tofu industries in Semarang Regency, (2) the factors that affect the demand for soybean on home industries and small tofu industries in Semarang Regency, (3) the elasticity of demand for soybean on home and small tofu industries in Semarang Regency, and (4) the feasibility of home and small tofu industries in Semarang Regency. The method used in this research is descriptive-analytical method. This research was conducted in Semarang Regency in 2019, and the samples were taken purposively 30 tofu industry as respondents. Soybean suppliers of home industries and small tofu industries were analyzed by using table analysis, factors that affect demand for soybean on home industries and small tofu industries and the elasticity of demand for soybean were analyzed using linear regression analysis, while the feasibility of home industries and small tofu industries calculated using BEP, R/C, and π/C analysis. The results showed that soybean suppliers of home industries and small tofu industries in Semarang Regency are traders at Babadan Market and Bawen Market also shop traders in East Ungaran District, West Ungaran District, Bawen District, and Semarang City. Then, demand for soybean is affected by tofu prices, labor costs, cooking recipes, and demand for tofu. The study shows that the price elasticity of soybean demand is inelastic. The BEP, R/C, and π/C show that home industries and small tofu industries in Semarang Regency are feasible to operate.

Keywords: demand, elasticity, feasibility, home industries and small tofu industries, soybean

INTRODUCTION

Semarang Regency is one of the areas that is the center for tofu-making business. Semarang Regency is well-known as tofu and meatball production area for food souvenirs. The tofu-making business in Semarang Regency is in the form of home industry and a small tofu industry spread across several regions. The home industry and small tofu industry can meet the needs of tofu in Semarang Regency and its surroundings. Related to the existence of home industries and small tofu industries that use soybeans as their raw material and the increasing number of people who consume these processed soy products, the demand for soybeans in the Semarang Regency will increase (BPS, 2015).

The home industry and tofu small industry that already exist in the Semarang Regency certainly need a supply of soybeans for their production. The locations of household industries and tofu small industries in the Semarang Regency are still difficult to reach. There is an industrial location at the foot of the mountain with steep and narrow roads. This can be a problem. These problems, among others, can be due to transportation which is closely related to the supply of soybeans or soybean delivery to industrial locations.

The demand for soybeans in the home industry and small tofu industry in Semarang Regency can change and is influenced by several factors. The price of soybeans in Semarang Regency varies among suppliers and the price of soybeans can sometimes change. The issue of soybean price can be an important consideration for home industries and small tofu industries to carry out their production activities and to set output prices. The labor problem in the Semarang Regent family industry and the small tofu industry is due to the existence of other industries, such as factories that absorb more labor, and the number is decreasing.

METHOD

The basic methods used in this research are descriptive and analytical. Descriptive methods can be used to describe, describe, explain the object of research, and to obtain useful descriptions (Arifin & Junaiyah, 2010). The analytical method is a method of measuring variables so that it can be used to test the truth of the hypothesis (Martono, 2014).

The research location was chosen purposively or deliberately, namely how the area was selected for the research location was carried out with certain considerations by with the research objectives. The research location chosen was Semarang Regency with the consideration that there are home industries and tofu small industries that continue to grow every year, therefore researchers are interested in observing and identifying how the demand for soybeans and the feasibility of home industries and tofu small industries in Semarang Regency.

The research population is all home industries and tofu small industries in Semarang Regency, amounting to 40 industries. The determination of the respondents was done by using the purposive sampling method. The purposive sampling method was used to determine which respondents were the owners of home industries and tofu small industries in Semarang Regency. The selected respondents are home industry owners and tofu small industries that produce white tofu products because 3 industries do not produce white tofu. The number of respondents determined was 30 respondents.

The method used to estimate the factors that influence the demand for soybeans in the home industry and small tofu industry is multiple linear regression analysis. The multiple linear regression analysis equation is:

Y = b0 + b1 X1 + b2 X2 + b3 X3 + b4 X4 + b5 X5 + b6 DT + ei

Description:

Y = Total demand for soybeans (Kg)
b0 = Intercept
b1 – b6 = Regression coefficient
X1 = Soybeans price (Rp)
X2 = Tofu's Price (Rp)
X3 = Labor costs (Rp)
X4 = Dose per cook (Rp)
X5 = Demand of Tofu (Rp)
DT = Dummy type of industry (1=home industry; 0=small industry)
ei = Error

Classic assumption testing of the model must be carried out before analysis of the regression model. The classical assumption test is carried out to find out whether there are deviations in the model. The classic assumption tests used in this regression model are the normality test, multicollinearity test, and heteroscedasticity test.

Analysis of costs, revenues, and benefits must be carried out first before a business feasibility analysis is carried out.

a. Total Cost

According to Asmara (2011), the cost formula is mathematically written as follows:

TC = TFC + TVC

Description:

TC = Total Cost (Rp)
TFC = Total Fixed Cost (Rp)
TVC = Total Variable Cost (Rp)

b. Revenue

According to Kasmir & Jakfar (2013), the revenue formula is mathematically written as follows:

TR = Q × P

Description:

TR = Total Revenue (Rp)
Q = Total Produsction (mold)
P = Product price (Rp)

c. Profit

According to Rahman (2015), the profit formula is mathematically written as follows:

π = TR – TC

Description:

π = profit (Rp)
TR = total revenue (Rp)
TC = Total Cost (Rp)

The analysis used to determine the feasibility of the home industry and small tofu industry in Semarang Regency is financially analyzed by using break even point analysis (BEP), revenue cost ratio (R / C) analysis, and profit cost ratio (π / C) analysis.

a. Break Even Point (BEP) Analysis

There are three analyzes of BEP, namely:

1) BEP Revenue Analysis

$$BEP_{revenue} = \frac{FC}{\frac{VC}{1 - TR}}$$

Description:

FC = Fixed Cost (Rp)
VC = Variable Cost (Rp)
TR = Total Revenue (Rp)

Hypothesis testing:

Revenue> BEP revenue, the business is feasible to develop.
Revenue≤ BEP revenue, the business is not feasible to develop.

2) BEP Production Analysis

$$BEP_{production} = \frac{FC}{P - AVC}$$

Description:

FC = Fixed Cost (Rp)

P = Product Price (Rp)
AVC = Average Variable Cost (Rp)
Hypothesis testing:
Business production > BEP production, the business is feasible to be developed.
Business production ≤ BEP production, the business is not feasible to be developed.

3) BEP Price Analysis

$$BEP_{price} = \frac{TC}{Q}$$

Description:
TC = Total Cost (Rp)
Q = Total Product (mold)
Hypothesis testing:
Output price> BEP price, the business is feasible to develop.
Output price ≤ BEP price, the business is not feasible to develop.

b. Revenue Cost Ratio (R/C) Analysis
R/C analysis is an analysis of the comparison between total revenues and total costs. Mathematically this analysis can be written as:

$$R/C = \frac{TR}{TC}$$

Description:
R/C = revenue cost ratio
TR = Total Revenue (RP)
TC = Total Cost (RP)
Hypothesis testing:
R/C > 1, business feasible to be developed.
R/C = 1, income received is equal to the total costs incurred.
R/C < 1, business not feasible to be developed.

c. Profit Cost Ratio (π/C) Analysis
π/C analysis is the ratio between the profits and the total costs incurred. Mathematically this analysis can be written as follows:

$$\beta = \frac{\pi}{TC}$$

Description:
B = profit cost ratio
π = profit (Rp)
TC = Total Cost (Rp)

Hypothesis testing:
π/C > interest, the business is feasible to be developed.
π/C ≤ interest, the business is not feasible to be developed.

RESULTS AND DISCUSSION

Demand Analysis from Soybean Suppliers

The main raw material in the process of making white tofu in home industries and tofu small industries in the Semarang Regency is soybeans. Production activities can be carried out if the raw materials are met. To meet the need for these raw materials, the home industry and small tofu industry in Semarang Regency need a daily supply of soybeans. Soybean supplies can be obtained from traders around the Semarang Regency area.

Traders who supply household soybean industry and small industry out in Semarang district can be divided into two, namely, a trader in the market and traders in the store. Traders in the market are found in Babadan Market and Bawen Market. The shop sword is located in East Ungaran District, West Ungaran District, Bawen District, Semarang City. The flow of soybean supply to the home industry and the tofu industry in the Semarang Regency is not all the same. In general, industrial owners place orders with traders by telephone. Then the order is confirmed and soybeans are sent directly from the trader to the home industry and tofu small industry who placed the order.

Factors Affecting Demand for soybeans

Multiple linear regression analysis was conducted to determine what factors influence the demand for soybeans in the home industry and the small tofu industry in Semarang Regency. Model testing is done by statistical tests which include adjusted R^2, F test, and t-test. The results of multiple linear regression analysis can be seen in Table 1.

Table 1. Results of Multiple Linear Regression Analysis Factors Affecting Soybean Demand of Home Industry and Small Tofu Industry in Semarang Regency

Independent Variable	Regression Coefficient	t-value	Significance	
Constant	-237.264	-3.783	0.001	**
Soybeans Price	-0.002	-0.219	0.828	Ns
Tofu's Price	0.001	3.249	0.004	**
Labor costs	0	-2.144	0.043	**
Dose per cook	22.093	9.567	0	**
Demand of Tofu	1.78	39.374	0	**
Dummy type of industry	-13.344	-2.614	0.016	**
Adjusted R^2			0.998	
F value			1976.992	
F sig			0	

Source: Primary Data Analysis (2019)

Description:
** = significance at the 95% confidence level (α = 0,05)
* = significance at the 90% confidence level (α = 0,10)
ns = not significant

Based on the results of the regression output in Table 1, it can be seen that the adjusted R^2 value is 0.998, which means that 99.8% of the variation in the dependent variable (soybeans demand) can be explained by the independent variables in the model (soybeans price, tofu's price, labor costs, Dose per cook, demand of tofu, and dummy type of industry). As much as 0.2% of the variation of the dependent variable is explained by other variables not included in the model. The F value of significance is 0.000 (<0.05), it means that the independent variable is soybean price, tofu price, labor cost, cooking measure, tofu demand, and industry type dummy together have a significant effect on the dependent variable, namely soybean demand.

The independent variables that have a significant effect are tofu price, labor cost, cooking dose, tofu demand, and dummy types of the industry at the 95% confidence level. The explanation for each variable that has a significant or insignificant effect in this study is as follows:

a. Constant

The regression coefficient of the constant is -237.264 with a significance of 0.001 (<α = 5%), so that the constant value has a significant effect on soybean demand in the home industry and tofu small industry in Semarang Regency. From these results, if all the independent variables involved in the regression analysis are ignored, the demand for soybeans in the home industry and small tofu industry is -237.264.

b. Soybeans Price

The regression coefficient of the soybean price is -0.002, meaning that if the other independent variables are fixed in value and the price of soybeans has increased by 1%, it will cause a decrease in the amount of soybean demanded by 0.002%. The significance is 0.828 (> α = 10%). This means that the independent variable individual soybean prices do not have a significant effect on the dependent variable soybean demand. This means that the price of soybeans is not one of the factors affecting the demand for soybeans in the home industry and the small tofu industry in the Semarang Regency. Soybean is the main raw material needed in producing tofu. So that when the price of soybeans fluctuates in price, home industry owners and small tofu industries will still buy soybeans to be able to carry out the production process.

c. Tofu's Price

The regression coefficient of the price of tofu is 0.001, which means that if other independent variables are fixed in value and the price of tofu has increased by 1%, it will cause an increase in the amount of soybean demanded by 0.001%. The significance is 0.004 (<α = 5%). This means that the independent variable of tofu price individually has a significant effect on the dependent variable on soybean demand. This means that the price of tofu is one of the factors influencing the demand for soybeans in home industries and tofu small industries in Semarang Regency. The price of tofu that has been set in each home industry and small

tofu industry in Semarang Regency is an important factor to get higher profits. The higher the price of tofu, the higher the quantity of soybean demanded.

d. Labor Costs

The regression coefficient of labor costs is 0,000, meaning that if other independent variables are fixed in value and labor costs increase by 1%, it will not cause an increase or decrease in the amount of soybean demanded (0,000%). Significance 0.043 (<α = 5 %). This means that the independent variable individual labor costs have a significant effect on the dependent variable soybean demand. This means that labor costs are one of the factors that influence the demand for soybeans in home industries and tofu small industries in the Semarang Regency. Labor costs are a very important factor for home industries and small industries. The more production, the more labor costs required will increase.

e. Dose Per Cook

The regression coefficient of the cooking dose is 22.093, meaning that if the other independent variables are fixed in value and the cooking dose increases by 1%, it will cause an increase in the amount of soybean demanded by 22.093%. The significance is 0.000 (<α = 5%), this means that the independent variable of the individual cooking dose has a significant effect on the dependent variable on soybean demand. This means that the cooking rate is one of the factors affecting the demand for soybeans in the home industry and tofu small industry in the Semarang Regency. The cooking rate in each home industry and small tofu industry in Semarang Regency is one of the important factors for producing good quality white tofu products. If the per cooking dose increases, the amount of soybean demanded will increase to continue producing tofu by the set production target.

f. Demand of Tofu

The regression coefficient of tofu demand is 1.780, meaning that if other independent variables are fixed in value and the demand for tofu increases by 1%, it will cause an increase in the amount of soybean demanded by 1.780%. The significance is 0.000 (<α = 5%). This means that the independent variable demand tofu individually has a significant effect on the dependent variable soybean demand. This means that the demand for tofu is one of the factors influencing the demand for soybeans in home industries and tofu small industries in Semarang Regency. Tofu demand is a demand for output in the home industry and small tofu industry in the Semarang Regency. Soybean demand, which is a derivative demand, is used to show soybeans used to produce the output.

g. Dummy Type of Industry

The regression coefficient of the dummy type of industry is -13.344, which means that the demand for soybeans in the tofu household industry is smaller than the tofu small industry. The significance is 0.016 (<α = 5%), so that H0 is rejected. This means that the dummy independent variable for the type of industry (home industry or small industry) individually has a significant effect on the dependent variable on soybean demand. The type of home industry or small industry in the tofu industry in Semarang Regency has differences that affect the level of soybean demand. This is because the two types of industries both use different amounts of soybean as the main raw material for each production. Besides, both the home industry and the tofu small industry in Semarang Regency have their respective production targets that each production must achieve.

Soybean Demand Elasticity

The elasticity of soybean demand in the home industry and small tofu industry in Semarang Regency is analyzed using price elasticity. Based on Table 6.4, it can be seen that the regression coefficient value of the soybean price is -0.002, which means that an increase in the price of soybeans by 1% will cause a decrease in the amount of soybean demanded by 0.002%. The magnitude of the price elasticity is less than 1 so that the price elasticity of the demand for soybeans in the home industry and small tofu industry in Semarang Regency is inelastic.

The price elasticity of soybean demand in the home industry and small tofu industry in Semarang Regency is negative. This is the same as the price elasticity of demand which is usually negative. When the price of a good increase, the quantity demanded usually decreases. The result of the inelastic price elasticity of soybean demand means that changes in soybean prices have less effect on changes in soybean demand in home industries and tofu small industries in Semarang Regency. This is because soybeans are the main raw material that must be in the process of making tofu in home industries and tofu small industries in Semarang Regency. If there are no soybeans, the production process cannot be carried out so that home industries and small tofu industries still have to buy soybeans.

Demand for soybeans is inelastic due to the increasing demand for tofu from people in Semarang Regency. White tofu produced by home industries and small industries tofu in Semarang Regency is not only for meeting local

food needs. Instead, the white tofu that is produced can be processed and used as a product that is sold to tourists who come to Semarang Regency. So, the white tofu production must be carried out and following with the predetermined amount of production. Besides, the quality of soybeans is also a consideration in determining the number of soybeans requested. Better quality soybeans will make the white tofu products better and better. The quality of the white tofu can be felt in terms of the taste and smell of the tofu produced. If the quality of the white tofu produced is better, the selling price will be higher, so that higher production costs can be balanced with higher revenues.

Break Even Point (BEP) Analysis

BEP Revenue Analysis

BEP revenue is one of the business feasibility analyzes used to determine whether a business is feasible or not to be developed. A business is said to be feasible to develop if the value of the received revenue is greater than the BEP value of its receipt. Details of the BEP for household and tofu small industries in Semarang Regency can be seen in Table 2.

Table 2. BEP Revenue of Tofu Industry in Semarang Regency in 2019

Description	Tofu's home industry	Tofu's Feasibility index
Fixed Cost (Rp/Year)	31,468,395	38,461,023
Variable Cost (Rp/Year)	729,242,264	1,482,767,466
Total Revenue (Rp/Year)	1,148,705,145	2,561,396,600
BEP Revenue (Rp)	86,176,654	91,332,536
Standart	Revenue > 86,176,654	Revenue > 91,332,536
Feasibility	Feasible	Feasible

Source: Primary Data Analysis (2019)

The BEP revenue for tofu household industry in Semarang Regency is RP 86,176,654. The total revenue is known to be RP 1,148,705,145. These results indicate that revenue > BEP revenue is RP 1,148,705,145 > RP 86,176,654.

Meanwhile, the BEP revenue for tofu small-scale industry in Semarang Regency is Rp. 91,332,536. The total revenue is known to be RP 2,561,396,600. These results indicate that revenue> BEP revenue is RP 2,561,396,600> RP 91,332,536.

This means that the tofu household industry and the tofu small industry in Semarang Regency are feasible based on the BEP revenue analysis.

BEP Production Analysis

BEP production is one of the feasibility analyses that used to determine whether a business is feasible or not to be developed. A business is said to be feasible to develop if the amount of output produced is greater than the BEP value of its production. Details of BEP production in the tofu household industry in Semarang Regency can be seen in Table 3.

Table 3. BEP Production of Tofu Industry in Semarang Regency in 2019

Description	Tofu's home industry	Tofu's Feasibility index
Fixed Cost (RP)	31,468,395	38,461,023
Product Price (RP)	25,863	29,050
Average Variable Cost (RP)	16,418	16,816
BEP Production (mold)	3,332	3,143
Total production (mold)	44,415	88,172
Standard	Production > 3,332	Production > 3,143
Feasibility	Feasible	Feasible

Source: Primary Data Analysis (2019)

BEP production in the tofu household industry in Semarang Regency is 3,332 molds. Total production amounted to 44 415 molds. These results indicate that the production output >

BEP production is 44,415 molds > 3,332 molds. Meanwhile, the BEP for tofu small-scale industry in Semarang Regency is 3,143 molds. Total production amounted to 88,172 molds of tofu. These results indicate that production output > BEP production is 88,172 molds > 3,143 molds. This means that the home industry and tofu small-scale industry in Semarang Regency are feasible to be developed based on the BEP production analysis.

BEP Price Analysis

BEP price is one of the business feasibility analyzes used to determine whether a business is feasible or not to be developed. A business is said to be feasible to develop if the output price sold is greater than the BEP price. Details of BEP prices in the home industry and small tofu industry in Semarang Regency can be seen in Table 4.

Table 4 BEP Price of Tofu Industry in Semarang Regency in 2019

Description	Tofu's home industry	Tofu's Feasibility index
Total Cost (Rp)	760,710,659	1,521,228,490
Total Production (mold)	44,415	88,172
BEP price (Rp/mold)	17,127	17,252
Output Price (Rp/mold)	25,863	29,050
Standart	Output Price > 17,127	Output Price > 17,252
Feasibility	Feasible	Feasible

Source: Primary Data Analysis (2019)

The BEP price in the tofu household industry in Semarang Regency is RP 17,127 per mold. The output price is known to be RP 25,863 per mold. These results indicate that the output price > BEP price is RP 25,863 per mold > RP 17,127 per mold. Meanwhile, the BEP price for tofu small industry in Semarang Regency is RP 17,252 per mold. The output price is known to be RP 29,050 per mold. These results indicate that the output price > BEP price is RP 29,050 per mold > RP 17,252 per mold. This means that the home industry and tofu small industry in Semarang Regency are feasible based on the BEP price analysis.

Revenue Cost Ratio (R/C) Analysis

R/C analysis is a business feasibility analysis used to determine whether a business is feasible or not to be developed. R/C analysis, namely the comparison between total revenues and total costs. A business is said to be feasible to be developed if the value of R/C> 1. Details of the R/C analysis in the home industry and small tofu industry in Semarang Regency can be seen in Table 5.

Table 5. R/C of Tofu Industry in Semarang Regency in 2019

Description	Tofu's home industry	Tofu's Feasibility index
Revenue (RP)	1,148,705,145	2,561,396,600
Total Cost (RP)	760,710,659	1,521,228,490
R/C *ratio*	1.51	1.68
Standart	R/C > 1	R/C > 1
Feasibility	Feasible	Feasible

Source: Primary Data Analysis (2019)

The value of the R/C ratio in the tofu household industry in the Semarang Regency is 1.51. These results indicate that the R/C ratio > 1 is 1.51 > 1. The R/C value of 1.51 indicates that every RP 1,000 costs incurred will provide an income of RP 1,510. Meanwhile, the value of the R/C ratio in the small tofu industry in the Semarang Regency is 1.68. These results indicate that the R/C ratio > 1 is 1.68 > 1. The R/C value of 1.68 indicates that every RP 1,000 costs incurred will provide an income of RP 1,680. This means that the home industry and tofu small industry in Semarang Regency are feasible based on the R/C analysis.

Profit Cost Ratio (π/C) Analysis

The π/C analysis is one of the business feasibility analyzes used to determine whether a business is feasible or not to be developed. π/C analysis is the ratio between profit and total cost.

A business is said to be feasible to develop if the value of π/C > bank interest. Details of the π/C analysis in the home industry and small tofu industry in Semarang Regency can be seen in Table 6.

Table 6. π/C of Tofu Industry in Semarang Regency in 2019

Description	Tofu's home industry	Tofu's Feasibility index
Profit	387,994,486	1,040,168,110
Total Cost	760,710,659	1,521,228,490
π/C *ratio*	0.51	0.68
Interest	0.07	0.07
Standart	π/C > 0.07	π/C > 0.07
Feasibility	Feasible	Feasible

Source: Primary Data Analysis (2019)

The value of the π/C ratio in the tofu household industry in the Semarang Regency is 0.51. Meanwhile, the value of the π/C ratio in the small tofu industry in Semarang Regency is 0.68.

The interest used by the home industry and small tofu industry in Semarang Regency is from the BRI bank with an annual interest rate of 0.07. These results indicate that π/C ratio > 0.07, namely 0.51 > 0.07 in the tofu home industry and 0.68 > 0.07 in the small tofu industry, this means that the home industry and tofu small industry in Semarang Regency are feasible based on π/C analysis. The π/C value of 0.51 in the tofu home industry shows that every RP 1,000 costs incurred will provide a profit of RP 510. The π/C value of 0.68 in the tofu small industry shows that every Rp. 1,000 cost incurred will provide a profit of RP 680.

CONCLUSIONS

Based on the results of the analysis and discussion in the previous chapter, it can be concluded that:

1. Soybean suppliers to home industries and tofu small industries in Semarang Regency are traders in Babadan Market and Bawen Market as well as shop traders in East Ungaran, West Ungaran, Bawen, and in Semarang City Districts.
2. The factors that affect the demand for soybeans of the home industry and small tofu industry in Semarang Regency are the price of tofu, labor costs, cooking rates, and tofu demand.
3. The price elasticity of soybean demand of home industries and small tofu industry in Semarang Regency is inelastic.
4. The home industry and tofu small industry in Semarang Regency are feasible to be developed.

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