Contribution of Availability and Needs to Price Stability of Shallot Products
(Early cases of the Covid-19 pandemic in Semarang)

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ABSTRACT

This study aims to analyze the effect of Availability and Needs on the Shallot Price Stability in the Kota Semarang. This study uses secondary data that is already available at Dinas Perdagangan Kota Semarang. The data used is the daily data on shallot commodities in April and May 2020 which consists of data on Availability, Needs, and Price Stability obtained from the Dinas Perdagangan Kota Semarang. The data were tested for classical assumptions. The statistical analysis tool used is multiple linear regression analysis. The coefficient of determination in this study is 0.596, which means that the contribution of Availability and Needs to the Price Stability of shallots is 59.6% and the remaining 40.4% is influenced by other variables not examined in this study. The results showed that the availability and demand for shallots had an effect on price stability.

Keywords: Shallot, Price Stability, Availability, Needs

1. INTRODUCTION

Food is one of the main human needs besides clothing and housing. Along with increasing population growth, the need for food also increases. Unfortunately, the availability of food does not always meet these needs. Between the availability and the need for food, it is also related to food security. According to FAO [1], food security occurs when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their food needs and food preferences for an active and healthy life.

1.1. Literature Review

The concept of price stability is based on a situation where prices fluctuate all the time. Food price stability is a shared interest between producers and consumers. The interest of producers is the existence of business certainty because with stable prices it can improve production planning and of course better output. From the consumer side, food price instability has the potential to disrupt food security [2].

The factors influence price stability are distribution channel, availability and needs of the commodity, government's policies, and price in International Market [3]. Food availability is realized when two aspects have been met (1) availability of sufficient and equitable food for the entire population and (2) every resident has physical and economic access to food to meet nutritional needs in order to lead a healthy and productive life [1].

Based on the theory of basic needs put forward by Maslow [4], food needs occupy the most basic level to be met. Food is a universal human need. It is a must for every human being in the world must try to meet their food needs. Food becomes a basic need of every living thing in the world that can not be postponed. The need for food is a fundamental need for humans in order to survive and have a healthy body and strong, to avoid the risk of disease. Therefore, the fulfillment of food needs is one of the human rights that must be fulfilled [5].

Food commodities have a very important role in economic, social and political aspects. In Indonesia, several food commodities that often experience price fluctuations include rice, corn, soybeans, wheat flour,

sugar, cooking oil, shallots, chilies, eggs, meat and milk [6].

According to the Kementerian Perdagangan Republik Indonesia, although shallots have a low share of expenditure, their price fluctuations are very high [7]. This then pushed the contribution of shallot inflation to be high, the highest after rice. The high fluctuations in the price of shallots were mostly caused by pressure from the supply side, namely seasonal cropping patterns and types of commodities that are easily damaged [8]. Conditions like this indicate that shallots have an urgency to get attention in price stabilization [9].

Siahaan [10] states that shallot production, shallot imports, shallot demand and shallot prices have a significant effect on shallot prices in North Sumatra. Istifadah and Tjaraka [11] states that high food demand due to increasing population triggers fluctuations in food prices. However, the supply-side problem leads to food price instability. Reza, Firdaus, and Novianti state that the amount of supply and stock can decrease the commodity fluctuating prices; which means the price is stable.

1.2. Research Objectives

The objectives of this study are:

a. To analyze the effect of availability on the price stability of shallot in Semarang City.
b. To analyze the effect of needs on the price stability of shallot in Semarang City.

1.3. Conceptual Framework

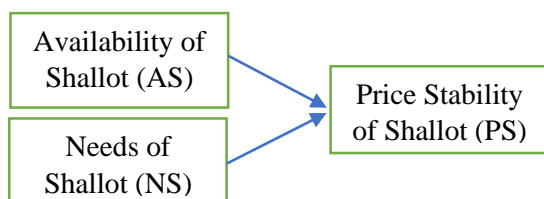The conceptual framework [3] of this research is shown in Figure 1.

Figure 1. Conceptual Framework

The supply side is availability which is the most important part in the stability of shallot prices. The demand side is represented by the needs for shallots [2].

1.4. Hypotheses

Based on the problem formulations, research objectives, theoretical framework, and the relationship between variables, the research hypothesis are :

H_1: Availability has an effect on the price stability of shallot.

H_2: Needs have an effect on the price stability of shallot.

2. METHODOLOGY

The data sources analyzed in this study are secondary data related to availability, needs, and price of shallot from the Dinas Perdagangan Kota Semarang from April to May 2020. The data analyzed is the initial condition of the Indonesian state that was affected by the Covid-19 pandemic. The data format is daily data.

The regression equation model used is a Power Function which is derived into a linear equation [12]. The model is :

$$PS = a(AS)^{\alpha}(NS)^{\beta}$$

It means that the variation of Price Stability value is highly dependent on the values of α and β. The Price Stability variation is equal to the sum of the values of α and β.

The Power Function is converted into a linear function by converting it to a logarithmic function. The model becomes:

$$Ln\ PS = Ln\ a + \alpha\ Ln\ AS + \beta\ Ln\ NS + e$$

The data analysis mechanism is carried out in steps. The first step is tabulation of data with data sources from the Dinas Perdagangan Kota Semarang. In the second steps, data conversion is carried out to logarithmic values. After the linear model is structured, the next step is to analyze the data using SPSS version 17 under Windows.

3. RESULTS

Availability, needs, and stability of shallot prices in Semarang City fluctuates every day. Changes that occur in the availability and needs will change the stability of the price of shallots.

At the beginning of the Covid-19 pandemic in April 2020, the lowest availability of shallots was 40 tons and the highest was 61 tons. The lowest needs for shallot is 13 tons and the highest is 16.4 tons. The lowest stability of price is 14.02% and the highest is 24.64% (Figure 2).
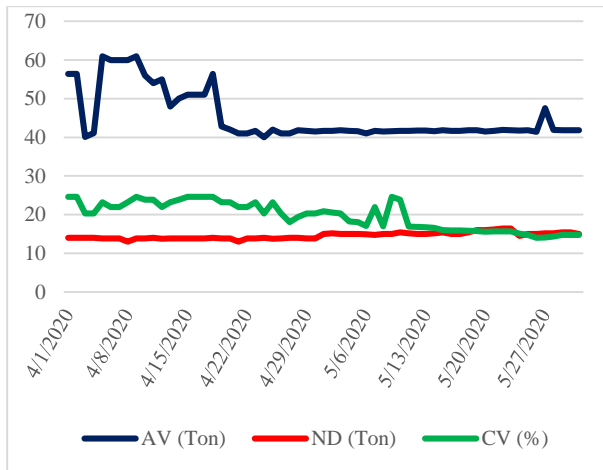
Figure 2. Availability, Needs, and Stability of Shallot Prices

Based on the classical assumption test, the data collected in this study are normally distributed, there is no multicollinearity between the independent variables in the model, there is no autocorrelation, there is no heteroscedasticity, and each independent variable is linear with respect to the dependent variable.

Regression analysis has resulted in the value of correlation, determination, analysis of variance, and the coefficients of the independent variables. Table 1 shows the results of the regression analysis.

Tabel 1. Regression Analysis Results

Output	Value	Sig
R (Correlation)	0.772	
R^2 (Determination)	0.596	
ANOVA (F-test)	42.696	0.000
Coefficient		
Constant	7.252	0.000
Coefficient of Availability	0.368	0.010
Coefficient of Needs	-2.124	0.000

The results of the regression analysis show that there is a fairly close relationship between Availability and Needs with Price Stability. This is indicated by the correlation value of 0.772. The determination value of 0.596 indicates that the variation of Availability and Needs contributes to the variation of Price Stability of 59.6%. It means that the remaining 40.4% is influenced by other variables not analyzed in this study.

The results of the analysis of variance state that changes in Availability and Needs together have a significant effect on Price Stability. It is indicated by a significance value (0.000) of less than 5%.

Regression analysis resulted in the contribution value of each Availability and Needs variable to the Price Stability variable. The results of this analysis are used to construct an equation that expresses this effect. The resulting equation is:

$$PS = 7.252 + 0.368\ AS - 2.124\ NS$$

The constant value of 7.252 indicates that if the Availability and Needs values are 0 (zero) then the Price Stability value is 7.252%. The Availability variable has a significant positive effect on the Price Stability variable. At the beginning of the Covid-19 pandemic, increasing the Availability of shallots will significantly increase Price Stability. If Availability increases by 1% then Price Stability will increase by 0.368%. On the other hand, if Availability decreases by 1%, Price Stability will decrease by 0.368% (*ceteris paribus*).

The Needs variable has a significant negative effect on the Price Stability variable. If the Need value increases by 1%, the Price Stability will decrease by 2.124%. On the other hand, if the Needs value decreases by 1%, then Price Stability will increase by 2.124% (*ceteris paribus*).

Availability and Need are contradictory variables. Availability variable will increase Price Stability but Needs variable will decrease Price Stability. This study states that the effect of Availability is +0.368 while the effect of Needs is -2.124. Both variables have a significant effect on Price Stability. It means that the influence of Needs is more dominant than the influence of Availability.

4. CONCLUSION

Based on the results of the analysis and discussion that has been carried out, the conclusions of this study are:

a. Based on the value of determination, this study states that the Availability and Needs variables contribute 59.6% to Price Stability.

b. This study produces an equation that states the effect of Availability and Needs on Price Stability:

PS = 7.252 + 0.368 AS – 2.124 NS

c. Availability variable has a positive and significant effect on the Shallot Price Stability variable. The higher the Availability, the higher the Price Stability.

d. Needs variable has a negative and significant effect on the Shallot Price Stability variable. The higher the Needs, the lower the Price Stability.

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Attachment 1: Raw Data

DATA OF AVAILABILITY, NEEDS, AND PRICE STABILITY OF SHALLOT (2020)

Date		Availability (TON)	Needs/Day (TON)	Price Stability (%)
April	1	56.42	14	24.64
	2	56.42	14	24.64
	3	40.12	14	20.33
	4	41.1	14	20.33
	5	61	13.89	23.23
	6	60	13.89	21.97
	7	60	13.89	21.97
	8	60	13	23.23
	9	61	13.89	24.64
	10	56	13.89	23.91
	11	54	14	23.91

Date		Availability (TON)	Needs/Day (TON)	Price Stability (%)
	12	55	13.8	21.97
	13	48	13.89	23.23
	14	50	13.89	23.91
	15	51	13.89	24.64
	16	51	13.89	24.64
	17	51	13.88	24.64
	18	56.42	14	24.64
	19	42.81	13.89	23.23
	20	42	13.89	23.23
	21	41	13	21.97
	22	41	13.89	21.97
	23	41.7	13.89	23.23
	24	40	14	20.33
	25	42	13.8	23.23
	26	41	13.89	20.33
	27	41	14	18.07
	28	41.8	14	19.36
	29	41.7	13.89	20.33
	30	41.5	13.88	20.33
May	1	41.70	15.00	20.85
	2	41.70	15.20	20.58
	3	41.80	15.00	20.33
	4	41.70	15.00	18.23
	5	41.60	15.00	18.07
	6	41.00	14.90	17.08
	7	41.70	14.80	21.97
	8	41.50	15.00	17.01
	9	41.60	15.00	24.64
	10	41.70	15.40	23.91
	11	41.70	15.20	16.94
	12	41.75	15.00	16.87
	13	41.75	15.00	16.73
	14	41.63	15.20	16.59
	15	41.81	15.40	16.01
	16	41.70	15.00	15.94
	17	41.65	15.00	15.88
	18	41.85	15.40	15.82
	19	41.80	16.00	15.76
	20	41.50	16.00	15.58
	21	41.70	16.20	15.64
	22	41.88	16.40	15.70
	23	41.80	16.40	15.64
	24	41.76	14.50	15.06
	25	41.85	15.00	14.78
	26	41.45	15.00	14.02
	27	47.55	15.20	14.12
	28	41.90	15.20	14.37
	29	41.86	15.45	14.73
	30	41.85	15.40	14.78
	31	41.80	15.00	14.78
TOTAL		**2764.53**	**888.96**	

Source: Dinas Perdagangan Kota Semarang, 2020