



Demand Analysis of Sweet Orange Fruit in Kendari City

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Abstract

This research aims to determine 1) The demand for sweet oranges in Kendari City and 2) the factors that influence the demand for sweet oranges in Kendari City. The research was deliberately determined from June to August 2023 in the traditional market of Kendari City. The sampling technique in this research was determined by incidental sampling. Incidental sampling is a technique for determining samples based on chance, that is, anyone who coincidentally/incidentally meets the researcher can be used as a sample if it is deemed that the person they happen to meet is suitable as a data source. Technique The sample in this study was 40 oranges sweet consumers. This data analysis uses multiple linear regression analysis using the SPSS application. The variables observed in this research are the price of sweet oranges, the price of mangoes, income, age and number of family members. The results of the research are that the average demand for sweet oranges in Kendari City is 2.6 kg/week and the factors that significantly influence the demand for sweet oranges in Kendari City are the price of sweet oranges, the price of mangoes, income and the number of family members ($\alpha < 0.05$). Age has no significant effect on demand for sweet oranges in Kendari City ($\alpha > 0.05$).

Keywords: Sweet Orange Fruit, Demand, Multiple Linear Analysis.

INTRODUCTION

Indonesia is a country with abundant natural resources, making it one of the countries with great potential in the agricultural sector. As a country that depends on the agricultural sector, the majority of Indonesia's population works as farmers to fulfill their needs. Fruits are included in horticultural commodities in the agricultural business. The variety of fruits on the



market includes citrus fruits, salak fruits, apples, mangoes, bananas, and others. This leads to productive opportunities for farmers and sweet orange entrepreneurs (Anggen, 2012).

Sweet orange has the scientific name *Citrus sinensis*, is a good horticultural commodity to be an agribusiness priority, because orange farming provides good profits, so it can be used as a source of income for farmers. In addition, citrus is a fruit commodity that is favored by the community either eaten directly or processed first. As a fruit commodity that has high economic value, it is appropriate that the development of citrus farming receives great attention, because of its large contribution to the national economy (Nainggolan, et al., 2013). The most produced type of citrus fruit is sweet orange (orange) 60%, followed by tangerine (mandarin) as much as 20% and the rest are types of siam (tangerine), lemon, kaffir lime, and others (Scordino, et al., 2013).

Sweet orange fruit in kendari city is a fruit commodity that is widely offered by traders in traditional markets because many consumers are interested and has its own economic value. The use of sweet orange fruit in its use varies, such as direct consumption or resale into derivative products from citrus fruits, for example orange ice, fruit salad, pudding and others. The production of sweet orange fruit or siamese oranges in Kendari City in the last four years has experienced significant ups and downs, starting in 2020 the production of orange fruit in Kendari City reached 2,247 quintals then rose to 2021 sweet orange fruit production experienced an increase in production of 10,244.06 quintals afterwards in 2022 sweet orange fruit production decreased only producing products of 5,479 quintals and in 2023 sweet orange fruit production again experienced an increase in the amount of production of 12,064.04 quintals (BPS Kota Kendari, 2024).

Public consumption of fruits, such as sweet orange fruit, is good along with the increase in population, the level of public income, and the higher public awareness of the importance of nutritious food. (Asmidah, et al., 2013)..

Based on this, I am interested in conducting research with the aim of knowing the demand for sweet orange fruit in Kendari City and the factors that influence it. This research has several uses, including as information for citrus fruit traders to understand the demand for citrus fruits, providing information for consumers who consume citrus fruits, providing a reference for the government in making policies related to citrus fruit demand, and serving as reading material and references for other researchers related to demand theory.

METHOD

The population in this study are all sweet orange fruit consumers who are the people of

Kendari City. The population distribution in four traditional markets in Kendari City namely long market, fruit market, andonohu market, and lapulu market. The sample in this study were consumers of sweet orange fruit. The technique in determining the sample used is Incidental Sampling. The number of samples in this study were 40 people.

The types of data used in this research are qualitative and quantitative, sourced from primary and secondary data. Primary data includes respondent identity, sweet orange price, income, age, papaya price, and manga price, and secondary data in the form of supporting files. Data collection procedures or techniques are observation, and questionnaires. The variables in this study consist of independent variables and dependent variables. The dependent variable (Y) is the demand for sweet orange fruit, and the independent variable (X) is X1 sweet orange fruit price, X2 mango fruit price, X3 income, X4 age, and X5 number of family members. The analysis method used to answer the first objective is to use descriptive analysis and to answer the second objective is to use multiple linear regression analysis with SPSS tools.

RESULTS AND DISCUSSION

Demand for Sweet Orange Fruit in Kendari City

The demand for sweet orange fruit in Kendari City can be explained from the questionnaire results. The amount of demand for sweet orange fruit is the dependent variable in this study. The amount of demand for sweet orange fruit is the amount of weekly purchases of sweet orange fruit in kilograms. The amount of consumption of sweet orange fruit demand can be seen in the following table.

Table 1 Demand for sweet orange fruit in Kendari City (Kg/week)

Demand for Sweet Orange Fruit (Kg/week)	Number of Respondents (Person)	Percentage (%)
1-3	33	82,5
3-5	7	17,5
Average demand = 2.6 Kg	40	100

Based on Table 1, it can be seen that the average consumer demand for sweet orange fruit in Kendari City is 2.6 Kg / week. Of the 40 respondents, the largest number of respondents, namely 33 people or 82.5%, demanded sweet orange fruit with an amount of 1-3 Kg / week, while the least was a respondent with a total of 7 people or 17.5% with a demand for sweet orange fruit as much as 3-5 Kg / week.

Classical Assumption Test

Before starting the multiple linear regression test on the factors that affect the demand for sweet oranges, first as a researcher conducts what is called a classic assumption test. The classic assumption test is an analysis carried out to determine whether the regression model is good or vice versa. The classic assumption test on multiple linear regression consists of normality test, multicollinearity test and heteroscedasticity test.

Normality Test

The normality test is a test used to determine whether a data model is normally distributed or not. It is said to be normal if the significant level is above 0.05 and vice versa if it is below 0.05 then it is not normal. This test was carried out using the *Kolmogorov-Smirnov* test, plot and histogram. The results of testing this research data are as follows.

Table 2 Normality Test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		40
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	.22799766
Most Extreme Differences	Absolute	.109
	Positive	.068
	Negative	-.109
Test Statistic		.109
Asymp. Sig. (2-tailed)		.200 ^{c,d}

Based on the results from table 2, the significance value in the test is 0.200. This value is greater than 0.05, meaning that the data is normally distributed.

Multicollinearity Test

Multicollinearity test is an event that explains the correlation or strong relationship between two or more variables in a multiple regression model. To see whether there is multicollinearity, then a simple method can be used, namely by looking at the *Coefficients* table. When the Tolerance value is less than 0.10 or the VIF value is more than 10, there is no multicollinearity. The multicollinearity results can be seen in the table below.

Table 3 Multicollinearity Test Results

Free Variable	Tolerance	VIF
Sweet Orange Fruit Price	.884	1.132
Mango Fruit Price	.798	1.252
Revenue	.781	1.281
Age	.706	1.417
Number of Family Members	.852	1.174

Dependent Variable : ln Y

Based on Table 3, it can be seen that the price of sweet orange fruit has a *Tolerance value* of 0.884 and a VIF value of 1.132, the price of mango fruit has a *Tolerance value* of 0.798 and a VIF value of 1.252, income has a Tolerance value of 0.781 and a VIF of 1.281, age has a Tolerance value of 0.706 and a VIF of 1.417 and the number of family members has a Tolerance value of 0.852 and a VIF of 1.174. This shows that the Tolerance value of each variable is less than 0.10 and for the VIF value is less than 10. So it can be concluded that there is no multicollinearity.

Results of Regression Estimation of Demand for Sweet Orange Fruit in Kendari City

The influence of independent variables (X) consisting of sweet orange fruit prices, mango fruit prices, income, age, and number of family members on the dependent variable (Y), namely the demand for sweet orange fruit, then multiple linear regression analysis is carried out. Multiple linear analysis is used to see the influence between the influence of one variable and another. In this study multiple linear regression is used to see what variables affect the demand for sweet oranges in Kendari City. Based on the demand for sweet orange in Kendari City, the regression equation is produced as follows:

$$\ln Y = 2.450 - 2.031 \ln X_1 + 0.964 \ln X_2 + 0.469 \ln X_3 + 0.259 \ln X_4 + 0.439 \ln X_5$$

From the regression equation, a costanta value of 2.450 is obtained. In other words, the amount of demand for sweet orange fruit is rated at 2,450 Kg if all variables have an effect.

Test Coefficient of Determination (R^2)

The coefficient of determination test in multiple linear regression is used to determine the percentage contribution of the influence of the independent variables (X_1, X_2, X_3, X_4, X_5) simultaneously on the dependent variable (Y). To determine the magnitude of the influence of

the independent variable on the dependent variable, the R test value is used². The results of the R test analysis² can be seen in the table below.

Table 4 Regression Results of Simultaneous Testing Model Variation of Independent Variables on Dependent Variables

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.857 ^a	.734	.695	.24419

From the results of SPSS output regression analysis in Table 3, the coefficient of determination (*R square*) value of 0.857 indicates that the magnitude of the influence of the sweet orange fruit price variable (X_1), the mango fruit price variable (X_2), the income variable (X_3), the age variable (X_4) and the variable number of family members (X_5) has a strong positive relationship to the total demand for sweet orange fruit (Y). The coefficient of determination shows that 73.4% of the diversity of sweet orange fruit demand in Kendari City can be explained by the factors of sweet orange fruit price, mango fruit price, income, age and number of family members and the remaining 26.6% is explained by the diversity of other variables outside the variables used.

R square is a value that shows how much the independent variable affects the dependent variable. R square has a range of numbers ranging from 0 to 1 which indicates the magnitude of the combination of independent variables together affecting the value of the dependent variable. There are three categories of grouping on the R square value, namely the strong category, moderate category and weak category (Hair et al., 2011). Based on the Hair et al statement, the R square results in this study are high because they are close to 1.

Simultaneous Significance Test (F Test)

The F test is used to see whether the independent variables simultaneously affect the dependent variable in the study of sweet orange fruit demand in Kendari City. The results of the F test can be seen in table 5.

Table 5 Results of Simultaneous Analysis of the Effect of Independent Variables on Dependent Variables (Demand for Sweet Orange Fruit in Kendari City).

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	5.604	5	1.121	18.797	.000 ^b

	Residuals	2.027	34	.060		
	Total	7.632	39			

Based on Table 5, the F test analysis conducted can be seen that the value of F count is 18.797 with a significance of 0.000 and a confidence level of 95% or $\alpha = 0.05$, because the significance is less than α ($0.000 < 0.05$), it is known that the price of sweet orange fruit, the price of mango fruit, income, age and number of family members is an independent variable in the regression model Jointly affect the demand for sweet orange fruit. Based on the results of this analysis, the research hypothesis which states that the demand for sweet orange fruit is influenced by the price of sweet orange fruit, the price of mango fruit, income, age and number of family members is accepted.

Partial Test (T Test)

The t test is a test used to test the research hypothesis regarding the effect of each independent variable partially on the dependent variable. The results of the t test analysis can be seen in table 6.

Table 6 Results of Analysis of Partial Influence of Independent Variables on Dependent Variables (Demand for Sweet Orange Fruit in Kendari City)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.450	4.389		.558	.580
	LN_X1	-2.031	.286	-.669	-7.112	.000
	LN_X2	.964	.423	.226	2.280	.029
	LN_X3	.469	.137	.342	3.421	.002
	LN_X4	.259	.146	.187	1.778	.084
	LN_X5	.439	.150	.281	2.932	.006

An explanation of the effect of each independent variable on the dependent variable is as follows:

a) Sweet Orange Fruit Price (X_1)

Partial test results with a confidence level of 95% ($\alpha = 0.05$) can be seen the significance value of the sweet orange fruit price variable (X_1) of $0.000 \leq 0.05$. This value explains that

partially the sweet orange fruit price variable has a real effect on the demand for sweet orange fruit. This is because the stock of citrus fruits in the four markets is a lot of stock and has a normal price that has not increased, having an impact on the average consumer buying sweet oranges in large enough quantities. In accordance with the assumption of the law of demand, namely the higher the price of an item, the level of demand for that item will decrease and the lower the price of an item, the demand for that item will increase. Based on the regression analysis that the coefficient value of the price of sweet orange fruit is -2.031 which indicates that every increase of Rp1 sweet orange fruit price will reduce the demand for sweet orange fruit by -2.031 Kg. The regression coefficient value of the price of sweet orange fruit is negative, the negative sign indicates an unidirectional relationship between the price of sweet orange fruit and the total demand for sweet orange fruit.

b) Mango Fruit Price (X_2)

Partial test results with a confidence level of 95% ($\alpha = 0.05$) can be seen the significance value of the mango fruit price variable (X_2) of $0.029 \leq 0.05$. This value explains that partially the mango fruit price variable does not affect the demand for sweet orange fruit. This is because the price of mangoes in the four markets used as research sites is more expensive than the price of sweet orange fruit. However, if the price of mangoes is the same or cheaper, consumers can switch to buying mangoes because they both contain vitamin C which is good for the body. Based on the regression analysis that the coefficient value of the price of mango fruit is 0.964 which indicates that every increase of Rp1 mango fruit price will increase the demand for citrus fruit by 0.964Kg. The regression coefficient value of the price of mango fruit is positive, a positive sign, a positive sign indicates a unidirectional relationship between the price of mango fruit and the amount of demand for sweet oranges.

c) Income (X_3)

Partial test results with a confidence level of 95% ($\alpha = 0.05$) can be seen the significance value of the income variable (X_3) of $0.002 \leq 0.05$. This value explains that partially the income variable affects the demand for sweet orange fruit. This is because the average consumer of sweet orange fruit has a high income and traders who manage sweet orange fruit into orange ice and others as it causes them to buy sweet orange fruit in a fairly large amount per day. Based on regression analysis that the coefficient value of the income variable is 0.469 which indicates that every increase of Rp1 consumer income will increase the demand for sweet orange fruit by 0.469Kg. The regression coefficient value of income is positive, the positive sign indicates a



unidirectional relationship between income and demand for sweet orange fruit.

d) Age (X_4)

Partial test results with a confidence level of 95% ($\alpha = 0.05$) can be seen the significance value of the age variable (X_4) of $0.084 \geq 0.05$. This value explains that partially the age variable has no effect on the demand for sweet orange fruit. This is because consumers who come to buy sweet orange fruit in traditional markets have varying ages. Based on regression analysis that the coefficient value of the age variable is 0.259 which indicates that every one year increase in consumer age will increase the demand for sweet orange fruit by 0.259 Kg. The value of the income regression coefficient is positive, the positive sign indicates a unidirectional relationship between age and demand for sweet orange fruit.

e) Number of Family Members (X_5)

Partial test results with a confidence level of 95% ($\alpha = 0.05$) can be seen the significance value of the variable number of family members (X_5) of $0.006 \leq 0.05$. This value explains that partially the variable family members affect the demand for sweet orange fruit. This is because the number of family members gives an idea of the high number of consumers in consuming sweet orange fruit. Based on the regression analysis that the coefficient value of the variable number of family members is 0.439 which indicates that each increase of one individual in the number of family members will increase the demand for sweet orange fruit by 0.439Kg. the value of the income regression coefficient is positive, the positive sign indicates a unidirectional relationship between the number of family members and the demand for sweet orange fruit.

CONCLUSION

Based on the results and discussion that has been done and guided by the research objectives, it can be concluded that the demand for sweet orange fruit in Kendari City is 2.6 Kg / week. Factors that affect the demand for sweet orange fruit in Kendari City are the price of sweet orange fruit, the price of mango fruit, income and the number of family members have a positive and significant effect on the demand for sweet orange fruit. While age is not significant to the demand for sweet orange fruit





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