

Determining Factor Analysis on Household Fruit Consumption in the City of Palembang South Sumatera Indonesia

by Dessy Adriani

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Determining Factor Analysis on Household Fruit Consumption in the City of Palembang South Sumatera Indonesia

Tita Marsita¹, Fahrurrozie Sjarkowi², Dessy Adriani³

Master Program of Agribusiness, Faculty of Agriculture, Sriwijaya University, Palembang

Abstract: *The availability of fruit in Indonesia is mostly seasonal. This study found that the availability of the fruit does not directly confirm its consumption, therefore, food consumption patterns may vary depending on the group of socio-economic and household characteristics. Research on fruit consumption pattern is important in accordance to the effort to increase the consumption of fruits. This research analyze the factors that affect the fruit consumption of household in Palembang. This study used raw data of National Socioeconomic Survey March 2017 household survey at City level in South Sumatera Province, using analysis method of multiple linear regression. The equations used are local fruit prices, imported fruit prices, grain expenditures, non-food expenditures, number of household members, consumer tastes. middle and upper income group brackets and based on the analysis we found a good models with a level of 0.5.*

Keywords: Consumption, Tropical Fruit , Urban, Indonesia

1. Introduction

According to Sjarkowie and Noerdin (2015), food diversity will be useful as an effort to reduce food crisis in times of unfriendly weather. In order to apply food diversity, it is necessary to change the consumption pattern of the society in general. Food consumption patterns around the world have had significant changes in the last decade. Indonesia has fourth largest population in the world with relatively fast economic growth and has significant changes in food consumption patterns to choosing foods with high quality (minerals, vitamins, calcium, etc.).

Currently in Indonesia fresh fruits are used as one of the requirements for the fulfillment of nutritious food so the consumption should be met every day because they contain the vitamins needed by everyone. Changes in consumption patterns (*dietary pattern*) is especially seen in the consumption pattern of horticultural products, as the source of vitamins and minerals easily obtained in both rural and urban. Fruit is also relatively available year round though some fruits are seasonal. With the increasing number of imported fruit to Indonesia, the availability of fruits is relatively stable throughout the year. The availability of fruit in Indonesia is largely a tropical fruit that is relatively seasonal (Purwanto, 2010)

In addition to the income factor, urban community has a different consumption pattern compared to rural community. In addition people in the city do not cultivate their own food, so consumption choices are not limited by production cost. Significantly, urban communities is more influenced by the pattern of foreign food and the choice of food commodities, including fruits which is more available in urban areas compared to rural areas (Sawit , 2014).

The urban community, especially in Palembang city, has not fulfilled the need of FAO recommended fruit consumption of 65.75 kg / capita / year. Palembang city with a population of 1,602,071 people is required to have 105 . 336 . 168 kg / year of fruit consumption, while the production

of tropical fruit in Palembang city is only 4,515,100 kg / year. So the need is not supported by the production of tropical fruit, as it is insufficient to fulfill the level of consumption required in the city of Palembang. Thus, the necessity of these fruits can only be satisfied by the imported fruit that comes from other regions (local) or countries. However, if the need is related to the level of consumption, it can be seen that the availability of fruits does not guarantee the community can fulfill all of its consumption. Ofwana in kusrina (2017) explains that food consumption patterns vary depending on the socioeconomic level and household characteristics. Research on fruit consumption pattern is important to be done related to the efforts to increase the consumption of fruits, so this research aims to analyze the factors beside the fruits availability which influence the household fruit consumption in City of Palembang.

2. Research methods

This study used secondary data from the raw data of food consumption expenditure module for group of fruits in households based on National Socioeconomic Survey (SUSENAS) First Semester of 2017 done by BPS-Statistics of Indonesia Palembang City. The were selected from Socio-economic National Survey 2017; consisted of 783 households in Palembang City. Data processing method was Multi-variable Linear Regression for the following logarithmic equation (Widarjono, 2017):

$$\ln Y = \alpha_0 + \alpha_1 \ln X_1 + \alpha_2 \ln X_2 + \alpha_3 \ln X_3 + \alpha_4 \ln X_4 + \alpha_5 \ln X_5 + \alpha_6 D_6 + \alpha_7 D_7 + \alpha_8 D_8 + e$$

Where:

Y is expenditure consumption (rp / month)

α_0 is an interception coefficient (constants)

$\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6, \alpha_7, \alpha_8$ are regression

X_1 is the price of imported fruit (rp / kg)

X_2 is the price of local fruit (rp / kg)

X_3 is the grain expenditure (rp / kg)

X_4 is non-food expenditure (rp / month)

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X_5 is Number of Household Members (soul)
 D_6 is a medium income group Dummy (rp / capita / month) score 1 is for medium income and score 0 is other income group
 D_7 is high income group Dummy (rp / capita / month) Score 1 is High income and 0 is other income group
 D_8 is Consumer Taste Dummy (1 Local Fruit , 0 Imported Fruits)
 e = residual value

D_6 is a medium income group Dummy (rp / capita / month) score 1 is for medium income and score 0 is other income group
 D_7 is high income group Dummy (rp / capita / month) Score 1 is High income (\leq rp. 1.400.000) and 0 is other income level ($>$ rp1.400.000)
 D_8 is Consumer Taste Dummy (1 Local Fruit , 0 Imported Fruits)
 e = residual value

3. Results and Discussion

All variables in the value of expenditure or consumption are transformed into Ln (natural log) because the basic function of consumption expenditure is not linear, and usually the consumption spread is not normal, it is necessary to do the transformation. All available variables are also standardized because the variables used by different units and options are different.

The results showed that the determinant factors identified may affect patterns of consumption of fruit in Palembang are grain expenditure (X_1), non food expenditure (X_2), the price of imported fruit (X_3), the price of the local fruit (X_4), number of household members (X_5), consumer tastes (X_6), medium income group (X_7) and high income group (X_8). The result of multiple regression shows factors related to household consumption can be seen in Table 1 below :

Table 1: Factors influencing fruit consumption in the city of Palembang

variable	Regression coefficient	t	Sig.
(Constant)	3.035	3,432	0.001
Ln Imported Fruit	0.176	2,872	0.004
Ln Local Fruit	0.345	2,867	0.004
Ln Grain expenditure	0.098	2,641	0.008
Ln Non food expenditure	0.076	2,296	0.022
Ln Number of Household members	0.621	12,137	0.000
D Tasteconsumer	-0.418	-7,870	0.000
D mediuincome	0.823	18206	0.000
D highincome	1.419	28,728	0.000
$R^2 = 0,801$			
F statisti c = 390,038			
$\alpha = 0.05$			

Source: Secondary Data Analysis, 2018

Based on multiple linear regression analysis, the equation of estimator can be formulated as follows:

$$Y = 20.8 + 0.176 X_1 + 0.345 X_2 + 0.098 X_3 + 0.076 X_4 + 0.621 X_5 - 0.418 D_6 + 0.823 D_7 + 1.419 D_8$$

Where:

Y is expenditure consumption fruit (rp / month)

α_0 is a constant

X_1 is the price of imported fruit (Rp / kg)

X_2 is the price of local fruit (rp / kg)

X_3 is the grain expenditure (rp / kg)

X_4 is non-food expenditure (rp / month)

X_5 is Number of Household Members (soul)

The result of regression analysis shows that all the variables have positive effect After **F-test** and classical assumption test on multiple linear regression model, **t-test** is done to see the influence of each independent variable to dependent variable, that is expenditure of fruit in household. In this study, the **t-test** is conducted with the aim to see whether the independent variables partially affect both positively and negatively to household expenditure in the city of Palembang is as follows:

3.1. Socio-Economic Characteristic

3.1.1. The Price Of Imported Fruit (X_1) And the price of local fruit (X_2)

Variable is the price of imported fruit (X_1) and the price of local fruit significantly affect the error rate of 0.05. This is also in line with the research Suntharalingam, C. and Terano, R. (2017), that price fruit plays an important role in influence expatriates to eat fruits. Quality of fruit and nutritive value for health come in 2nd and 3rd respectively and followed by price. While the price appeared to be influential on fruit consumption decisions. The value of regression coefficient on the price of imported fruit (X_1) is 0.176 which means that each addition of one unit of imported fruit prices will increase the consumption of fruit by 0.176 while other variables are considered fixed. On the other hand, the value of regression coefficient on local fruit (X_2) is 0.345 which means that each addition of one unit of local fruit prices will increase the consumption of fruit by 0.345 while other variables are considered fixed. These result show that the difference of local fruit price has greater effect on the price of imported fruits, since the availability of local fruit in Palembang City is not influenced by season factor, but influenced by necessity, in addition local fruits such as bananas are almost available throughout the year.

3.1.2. The Grain (X_3) and Non-Food Expenditure (X_4)

The grain (X_3) and non-food expenditure significantly affected fruit consumption by 0.05 point of error rate. Grain expenditure (X_3) has 0.098 point of regression coefficient with positive sign. It shows that each addition of one grain dispersion will increase the fruit consumption by 0.098 while other variables are considered fixed. Non-food expenditure variables (X_4) also shows positive sign with 0.76 point of regression coefficient, which means that each additional unit of non-food expenditure will increase consumption of fruit by 0.76 while other variables are considered fixed.

3.2. Household Characteristics

3.2.1. Number of Household Members (X_5)

Variable Number of Household Members (X_5) has a significant effect and positive value which indicates that the

greater the number of ART, the more households will consume fruit in Palembang city. Furthermore, It shows that the economic growth rate of Palembang city affects in increasing of fruit consumption also. From the analysis, regression coefficient for number of household member is 0.621 which means that each addition of one unit of household members will increase the consumption of fruit by 0.621.

3.2.2. Consumer Taste (X_6)

Consumer taste dummy variable (X_6) has -0.418 point of regression coefficient. This means that households prefer imported fruits as compared to local fruit. Then consumer tastes (X_6) also shows significant effect with level of error 0.05. This is also in line with the research from Ekawati, et al. (2014) which stated that the decision to consume both local and Imported fruits are more determined by their own decisions than opinions of others. Consumers in Pontianak prefer imported fruits rather than local fruit. this also can be seen from fruit traders result interview that said that the fruit mostly purchased by consumers in Palembang city is imported fruit because in the fruit market itself there are a lot more imported fruits, and also imported fruit has more attractive packaging than the local fruit. For example apples, most consumers choose imported apples, although the price of imported apples is more expensive but consumers prefer imported apples due to some reasons such as imported apples availability in the market, quality of imported apples which has large, soft, crispy and sweet apple. This is also in line with the results of consumer preference research on apples and local oranges (Sukmaningtyas and hartoyo, 2013). Households prefer imported fruits rather than local fruits due to the superiority of other attributes, although relatively more expensive households in Palembang city show high purchasing power on imported fruits.

3.2.3. Medium Income (X_7) and High Income (X_8) Group

Medium income group variable and high income group have significant effect on qith 0.05 point of error rate and positive value which means that increasing in income level will also increase fruit consumption in Palembang City. This is also in line with Jamy's research, D. Ard (2007) that higher costs inversely proportional to the availability of higher Income fruits, positively associated with availability. With respect to low-cost items, only high-cost items reduce the opportunity for availability significantly. Then on the value of regression coefficient on the income is (X_6) is worth 0.823 which means that each addition of one unit of income is going to increase fruit consumption by 0.823 and other variables are considered fixed. While on the class high income has the value of regression coefficient of 1.149 which means that each addition of one unit of high income group will increase fruit consumption equal to 1,149, while other variable is considered fixed.

4. Conclusion

In conclusion, all the variables stated, price of imported fruit, price of local fruit, grain expenditure, non-food expenditure, number of household members, consumer tastes, middle and upper income group brackets significantly affect fruit consumption patterns in Palembang city either partially or together with 0.05 percent error level. In general, local price

variable has highest effect with 0.345 of regression coefficient while non-food expenditure variable has lowest affect with 0.076 of regression coefficient on increasing of fruit consumption.

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