

# The Decision of the Farmers in Marketing Vegetables

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**Abstract:** *In an effort to develop vegetable farming, farmers need to do one form of decision making in order to be able to manage the farm well to increase income. This will lead to problems of how farmers produce important decisions and what factors influence the decision to marketing processes. The research objectives formulated are to analyze the factors that influence the decision of farmers in determining the marketing process. The analysis used to answer the problem of this research is logistic regression analysis, in the form of explanation and description about facts in the field related to the factors of decision of farmers in marketing vegetables in Kanreapia Village. The results showed that vegetable selling price factors significantly influence farmers' decision in determining the process of marketing vegetables.*

**Keywords:** Decision, marketing process, vegetables, farmers

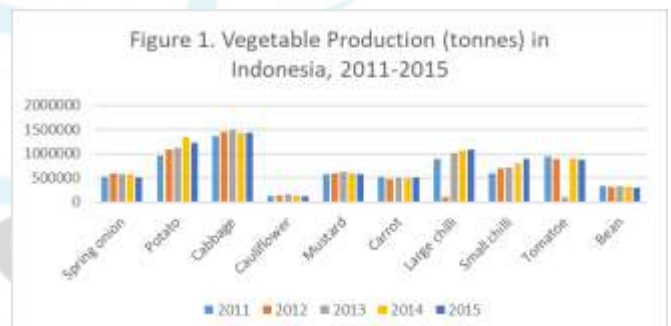
## 1. Introduction

Community needs for vegetables will continue to increase along with the increase in population and purchasing power. Vegetables can hardly be separated from various culinary dishes in Indonesia. With the development of the food industry so it will be related also increased demand for vegetables that act as one of the auxiliary materials. In order for the needs of vegetables always fulfilled then must be balanced with the amount of production. Given the growing need for vegetables, farmers are required to work efficiently in managing their farms in order to obtain higher yields and greater profits.

Due to the specific agro-ecological conditions in Indonesia, highland vegetables can meet the preferences of Indonesians and the world because they have a distinctive taste and an interesting performance. This is evidenced by the high demand for highland vegetables in Indonesia and commodity exports from several production centers. However, there is a tendency to decrease production due to highland vegetable cultivation that tends to high input with the use of fertilizers and chemical pesticides are quite large.

The decline in production is also due to government policies that have not fully facilitated farmers' activities in highland vegetable commodities. Where there are still many gaps in the policy issues of highland vegetable agribusiness system, starting from capital and input subsystem, farming subsystem, harvest and post harvest subsystem and marketing subsystem [1]. According to Director General of Horticulture (2015), production figures for some vegetable commodities have decreased in recent years. Production data for several

vegetable commodities in 2011-2015 can be seen in Figure 1 below:



Source: Directorate General of Horticulture, 2016

Figure 1 shows the decline in production rates on several types of vegetable commodities for the last two years. Commodities of cabbage, cauliflower, petsai/mustard, carrots, radishes, tomatoes and beans are seen to decrease in production, while other commodities have increased small production, but others have decreased in the past year.

The decline in production is also caused by problems in other vegetable farming business according to Ashari in Permana [2], is the low income of farmers, the limited knowledge of farmers, the limited land owned and the bargaining position of the less powerful farmers, thus causing low profits obtained by farmers. On the other hand, the main problems faced by most farmers in carrying out their business are limited capital, volatile product prices and lack of marketing guarantees. Partnership or partnership between farmers other agricultural business actors according to Sayaka et al. [3] is

expected to improve marketing efficiency, help farmers obtain a reasonable selling price and there is a guarantee of production that can be absorbed by the market.

Therefore a strategy is needed to eliminate or at least minimize these obstacles with an integrated program, such as strong cultivation, correct market information, adequate marketing facilities and transportation infrastructure to help increase farmer profits. The formation of new marketing networks for agricultural commodities is one of the developments of the marketing system and provides a market choice for agricultural commodities produced by farmers. The established marketing network is expected to increase the level of income earned for market participants, especially farmers as the producers.

Field observations indicate that in general the types of vegetables cultivated by farmers in Kanreapia Village Tombolopao District of Gowa Regency are: cabbage, white cabbage, potato, tomato, leek, carrot and cauliflower. The cultivation system is done by the farmers that are doing the rotation of the crops done continuously throughout the year. Because planting is continuous, the results can be harvested two to three times a year.

In an effort to develop vegetable farming, farmers need to do one form of decision making in order to be able to manage the farm well to increase income. This will lead to problems of how farmers produce important decisions and what factors influence the decision from the selection of vegetables, production process activities, to marketing processes.

Farmers as individual decision-makers are always influenced by the availability of household resources and also by their social relationships, ie, the decisions of a society will influence individual decisions. Besides, cultivation behavior is also related to social, cultural, economic and behavioral behavior of rural people life. The form of interaction between these factors is ultimately a decisive factor in decision-making by farmers.

The new problem of this research is about the decision of vegetable farmers in the marketing process. This is based on the importance of a process of decision analysis of farmers to gain attention in an effort to improve the welfare of farmers in running the agricultural business as the only source of income for farmers.

As suggested by Jean-Joseph Cadillon, etc [4], Vegetable farmers get their agricultural inputs from local input traders who can be found in most villages. These input traders get their supplies from regional input wholesalers, who in turn source their products from the manufacturing firms. Market gardening is carried out by vast numbers of farmers in Vietnam as it brings much higher gross income per land area than rice production.

## 2. Method of Analysis

### 2.1. Method of Research

This research is designed based on the goals to be achieved through descriptive analysis approach that describes descriptively about the decision of farmers in the process of vegetables marketing. With this research design, the research method used is survey.

### 2.2. Location and Time of Research

The study was conducted for five months, starting from January to May 2017, in Kanreapia Village, Tombolopao District, Gowa regency of South Sulawesi. The location of the study was chosen purposively with methodological consideration, the selected location is one of the central vegetable production centers in South Sulawesi. The respondents were vegetable farmers who cultivated potato, cabbage and tomato vegetables with the consideration that the three vegetables are the highest vegetables in the area.

### 2.3. Data Analysis

To answer the purpose in this study used logistic regression analysis. The main reason used this model is because the dependent variable (Y) to be tested is dummy (binary). While the independent variable (X) can be a mixture of category and non category data, in addition independent variables can also be qualitative or quantitative.

The parameter estimation in the logistic regression model is done using Maximum Likelihood Estimation method. This maximum likelihood method is used to maximize LF to obtain the parameter value as such that the probability of obtaining the maximum Y value. The alleged value of  $\hat{\alpha}_i$  can be obtained by making the first derivative of the logarithmic function of the likelihood function, against each parameter value as which we will know, then equating it with zero [5].

After estimating the model parameters, the next is to test the suitability of the model that was formed. The accuracy of the model will be tested using chi-square statistic ( $\chi^2$ ), with the following hypothesis.

H0: There is no difference between the model and the observed data (empirical data)

H1: There is a difference between the model and the observed data.

To know the factors that influence the decision of farmers in marketing process by using analysis of logistic regression analysis with formulation as follows:

$$Y = \ln(p/1-p) = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3$$

Where:

$Y_i$  = peasant decision opportunity

$Y_i = 1$ , if farmers decide to market vegetables to collectors

$Y_i = 0$ , if farmers do not market vegetables to collectors

$x_1$ : selling price (high or low)

$x_2$ : attachment (bound or unbound)

$x_3$ : marketing costs (Rp)

B0: constants

To test whether each logistic regression coefficient is significant, the Wald statistic test is used, with the following hypotheses.

H0:  $\hat{\alpha}_i = 0$  (price variables, attachments, marketing costs do not have a significant effect on the decision variables of farmers to market vegetables to collecting merchants)

H1:  $\hat{\alpha}_i > 0$  (price variables, attachments and marketing costs have a significant influence on decision variables farmer's market vegetables to collecting traders).

Each coefficient in the logistic regression model ( $\hat{\alpha}_i$ ) measures the change in logit estimates. If a certain independent variable ( $X_j$ ) rises 1 unit, while the other independent variable remains, then the average logit forecast will rise or fall by the value of the coefficient. Interpretation of logistic regression results can be done by looking at the odds ratio value. If an explanatory variable has a sign of a positive coefficient, then the odds ratio value will be greater than one, or vice versa. Interpretation of the odds value is obtained by taking antilogs from different coefficients. The interpretation of the odds value of this ratio is the tendency or probability  $Y = 1$  at condition  $x = 1$  for  $\exp(\hat{\alpha}_i)$  times compared with  $x = 0$ .

### 3. Results

The vegetable marketing system in Kanreapia Village Tombolo Pao sub-district, Gowa regency consists of four kinds, the first is marketing channel I (local marketing) is from farmers to collectors traders to wholesalers between regions to retailers to consumers. The marketing channel II (inter island marketing) is from farmers to collecting traders to inter-island wholesalers to dispatchers to retailers to

consumers, and marketing channel III is from farmers to local traders to consumers.

Binary logistic analysis is used to test independent variables or independent variables entered into the model. The purpose of this analysis is to see whether independent variables such as selling prices, attachments, and marketing costs influence the dependent variable i.e. the farmer's decision to market the vegetables to collecting traders or not to market the vegetables to the collecting merchants. The results of binary logistic analysis are as follows:

#### 3.1 Goodness of Fit Test

From result of analysis known that value of R Square is equal to 0,888. This shows that the change of independent variables or independent variables included in the model can explain the change of dependent variable or dependent variable by 88.8%. While the rest of 11.2% is explained by other variables not described in the model.

#### 3.2 Significant of Parameters Test

Based on the analysis results can be seen that the variable with a value smaller than the significance of 0.05 is  $x_1$  (selling price). The other two variables, namely, attachment and marketing costs do not have a real effect. The significance value of each variable is variable  $x_1$  (selling price) with significance value equal to 0,040, variable  $x_2$  (attachment) with significance value equal to 0,112, and variable  $x_3$  (marketing cost) with significance value equal to 0,613.

The results of the analysis of factors affecting farmers in marketing vegetables to collecting traders or not marketing vegetables to collecting traders are presented in Table 1.

**Table 1:** Logit Regression Test Results Factors influencing farmers' decision to market vegetables in Kanreapia Village, 2017

Variable	Coeffisien	SE	Wald	(df)	Sig.	Exp(Y)
Selling_price ( $x_1$ )	2,853	1,390	4,210	1	0,040	17,334
Attachment ( $x_2$ )	2,369	1,493	2,519	1	0,112	10,686
Cost_marketing ( $x_3$ )	0,000	0,000	0,256	1	0,613	1,000
Constant	-3,355	1,276	0,077	1	0,781	0,701
Chi square ( $\chi^2$ )						0,281
-2 log Likelihood Block Number = 0						111,641
-2 log Likelihood Block Number = 1						22,763
Negelkerke R Square						0,888

Table 1, shows that of the three factors that allegedly influenced the farmer's decision to market his vegetables, only one factor had a significant effect on the selling price ( $x_1$ ). This means that farmers' opportunities to market vegetables to collecting traders higher than not marketing to collecting traders are largely determined by the price factor of the vegetables offered by the collectors to the farmers.

Variable selling price has a significance value of 0.040, so this variable declared significant effect on the decision of farmers to market their vegetables to collecting merchants. The selling price variables have positive coefficient value, this means that the opportunity of farmers to market their vegetables to the collecting traders is positively related to the

selling price of vegetables, so it can be said that the higher the selling price of vegetables offered by collecting traders to the farmers, the possibility of farmers to market their vegetables to the collecting merchants the greater it is. This is due to the level of farmers' knowledge of the growing retail price of vegetables on the market. The value of odds ratio on the selling price variable is 17,334 which means that every increase of selling price equal to 1 rupiah hence the chance of farmer to market their vegetables to the collecting merchant 17,334 times.

This is consistent with the results of Kabeto's [6], that market participation decisions are significantly affected by prices, ownership of means of transportation, number of additional visits per year, quantity of production, awareness of quality

standards; market information, family size, access to credit, and gender. This shows that there is an urgent need for farmers to market their products and increase their income.

#### 4. Conclusion

The conclusion of this research is factor of vegetable selling price significantly influence to farmer decision in determining.

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#### Author Profile



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