

BEHAVIOR OF CAYENNE PEPPER FARMERS TO PRICE FLUCTUATION RISK IN GUMUKMAS DISTRICT JEMBER REGENCY

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ABSTRACT

This study was aimed to determine the farmer's behaviour in face of risk as result of pepper's price fluctuation in Gumukmas District, Jember Regency. There are three criteria in farmer's behavior: risk lover, risk neutral, and risk averter. Thirty-nine farmers was selected by using simple random sampling. The utility function was employed to determine farmer's behavior. In this research, utility function with Bernoulli and Neuman -Morgernstern technique was used. This specification was modified with neutral probability (50:50). Estimation on this function was done by using uncertainty equivalent (CE) through quadratic estimation. The result showed that around 33 farmers (84.62%) are risk neutral. The risk averter are 5 farmers (11.52%) and one farmer (2.56%) is risk lover. This result also showed that farmers with own land ownership status were more daring than farmers who own land tenure status, profit sharing, or farmers who have two land ownership status. Other results indicated that the farmers who pursued local pepper were more daring than the farmers who pursued hybrid pepper or farmers who pursued local and hybrid at once.

Keywords: *pepper, risk lover, risk neutral, risk averter, pepper price fluctuation*

INTRODUCTION

The potential of horticulture sub-sector in Indonesia is very big, although in its development still experiencing many obstacles among which there is no strong legal protection to protect the existence of horticulture. Horticulture itself is a branch of agronomy that focuses on the cultivation of fruit crops (fruktultura), flower plants (floriculture), vegetable crops (olerikultura), medicinal plants (biopharmaceuticals), and garden plants (landscape). The characteristics of horticultural plants are perishable or easily damaged. This became one of the considerations of farmers to cultivate horticultural crops. Horticulture is one of the commodities in the agricultural sector that has great potential to be developed in East Java. Some commodities whose production dominates in East Java in 2014 are onion, potato, cabbage, cayenne pepper, and watermelon. Over time In the last 4 years, the highest average production of horticulture is dominated by onion production which reaches 293 thousand tons, then the production of 223 thousand tons of cayenne pepper in the second position, and cabbage 204 thousand tons in the third position (BPS Jawa Timur). The high production of cayenne

pepper is also influenced by the development of cayenne pepper production in various districts and cities in East Java. The largest production of chili is in Blitar regency of 34.35 thousand tons, Jember of 32.12 thousand tons, Lumajang with 23.40 thousand tons and Kediri of 22.42 thousand tons in 2014. Based on these four regencies above the relatively large increase in the production of cayenne pepper is in Jember Regency that is 9,84 thousand tons or 44,14% from 22.28 thousand tons in 2013 to 32.12 thousand tons in 2014 (BPS East Java, 2015).

Cayenne pepper farming is a common farm in the Gumukmas District of Jember Regency although farmers are always faced with a situation that is not on the side of the price of cayenne pepper. In 2012-2015 price fluctuations in Jember Regency were experiencing very significant fluctuations. Fluctuations occur every month in one year, the highest price in the period 2012-2015 could reach Rp.60.000,00 while for the lowest price reached below Rp. 10.000,00 (Dinas Pertanian Kabupaten Jember, 2012-2015). However, farmers continue to cultivate cayenne pepper because the cayenne is still a prima donna for farmers in Jember regency es-

pecially in the District of Gumukmas. Therefore it is necessary to examine the characteristics of farmers as a comprehensive picture of business actors in which it will affect farmers' behavior in their business, whether they reject, accept or neutralize the risks by looking at the prices received by farmers at one harvest. This research is largely intended to identify farmers' behavior in facing the risk of price fluctuations.

RESEARCH METHODS

The location of the study was determined intentionally in Gumukmas District, Jember Regency with considering that the area is the center of cayenne pepper commodity.

This research uses descriptive, analytic. Descriptive method aims to create a description, description, and describe in a systematic, factual and accurate about facts, characteristics and the relationship between the phenomena under investigation. The analytic method was aimed to test the hypotheses and to interpret the results of the analysis (Nazir, 2006).

Sample technique was used is simple random sampling of farmer (simple random sampling) equal to 39 farmers. From the selected sample conducted interview with questionnaire, recording technique and observation for data collection.

To examine the profile of cayenne pepper farmers obtained through primary data through interviews and direct observation of the object of research, then the results of analysis is presented in the form of tables with explanations /descriptions. To know the behavior of cayenne pepper farmers against the risk of price fluctuation (neutral, refuse or dare bear) is used Bernoulli and Newman-Morgenstern Principles (Soekartawi, 1993), with steps as follows:

- a. Look for utility function that is relationship function between utilities with independent variables of value rupiah CE with the following formula:

$$U = b_0 + b_1 M_1 + b_2 M_2^p$$

Where U replace utility value, M replace CE value in rupiah, b_0 replace intercept, b_1 , b_2 , replace coefficient of utility function.

- b. The value of the utility function coefficient (b_2) shows the behavior of not daring to face the risk for the cayenne pepper farmer, with a limitation:

- Assuming the behavior of brave farmers at risk (risk lover) if $b_2 > 0$

- Assuming risk neutral behavior if $b_2 = 0$

- Assuming risk-averse behavior if $b_2 < 0$

To test whether a farmer has a bold behavior on risk or not, a hypothesis is proposed:

H0: $b_2 = 0$

H1: $b_2 < 0$

The result of analysis is done by using t-test with formula:

$$t_{hitung} = \frac{b_2}{Se(b_2)}$$

the decision-making criteria are as follows:

- If $t_{hitung} > t_{tabel}$ then H_0 rejected, it means farmers have behavior reluctant to risk.

- If $t_{hitung} < t_{tabel}$ then H_0 accepted, it means farmers have bold behavior against risk.

RESULTS AND DISCUSSION

Characteristics of Respondent Farmers at Gumukmas District Jember Regency

Farmers' behavior on the risk of price fluctuation consists of three types of behaviors: risk-averse behavior of farmers, risk neutral farmers, and risk lover behavior. Risk analysis can illustrate the state of uncertainty about a situation that will occur later (future) with decisions taken on the basis of various considerations at this time. The results of risk analysis can provide the best decision with risk management. This research was conducted on 39 respondents (cayenne pepper). The average farmer in Gumukmas district has a productive age of 47 years with an average experience of farming cayenne pepper for 18 years and the average number of family members as much as 3 people. The average land area is 0.832 hectares means that the area of land managed by farmers for cayenne pepper is a medium land area that is above 0.5 hectares. The average of cayenne pepper farmers take education for 9 years or the junior high, while the lowest level of education is 0 or never take formal education, while the highest is 16 years or equivalent Bachelor degree. The ownership status of the farmers' land for farming is divided into 4 ownership statuses namely own land, leasehold, profit-sharing land, and own land as well as rent. Varieties cultivated by farmers consist of two varieties such as hybrid cayenne pepper and local cayenne pepper.

The majority of cayenne pepper farmers in Gumukmas District plant local cayenne pepper, the reason is that local cayenne pepper is easy

to cultivate and has no special treatment. Cropping pattern done by the respondent farmers is paddy-cayenne pepper- corn in one year. During the rotation of cayenne pepper cultivation pattern is planted in the fourth month around April, because in that month the rainfall has begun to decrease. April was selected by the farmers for disease attacks and pests also reduced and increased production costs were not needed, so the risk of crop failure becomes smaller. Beside the month of April, farmers also planted in October, but this is not always done. The risk of harvest failure is very high, because this month the rain starts to increase so that the number of diseases and pests are very high. However, the actual cultivation of cayenne pepper in this period allowed farmers to obtain high prices, as the supply of cayenne pepper decreased or not as much as in the April planting period. The average number of local cayenne pepper during one growing season (7 crops) is approximately 3-4 tons / hectare while the average production of hybrid cayenne pepper for one season is 6-7 tons per hectare. Production of hybrid cayenne pepper is higher when compared with local cayenne pepper, because hybrid cayenne pepper is faster harvest than local cayenne pepper.

Farmer Behavior in Facing Risk Price Fluctuation In Gumukmas District Jember Regency

The results of research on the behavior of cayenne pepper farmers in Gumukmas District Jember Regency distributed based on observations in the field. The distribution is divided into the distribution of farmers' behavior in general, the distribution of farmers based on the status of land ownership and the distribution of farmer behavior based on the varieties cultivated by the cayenne pepper farmers in Gumukmas District, Jember Regency.

The result of attitude analysis of cayenne pepper in general based on Bernoulli and Neumann-Morgenstern method with the approach of value money (price) indicates that from 39 respondents' farmer 25 respondent farmers have negative b coefficient. This identifies the reluctance of farmers to bear the risk of cultivating cayenne pepper when price fluctuations occur. Furthermore, from the results of statistical tests showed that 5 respondents had negative b and negative coefficient values significantly at the level of significance 90% and 95%, the five farmers' responder is really reluctant in facing risk

or risk averter. Whereas 20 respondent farmers have a negative b coefficient and not significant at the 90% or 95% significance level, it means that the respondents have a neutral (risk neutral) attitude.

Respondent farmers with b positive coefficient were 14 respondents. This means that the respondent farmers have a brave attitude to assume risks in conducting farming activities when price fluctuations occur, but the statistical test shows only 1 respondent farmer is very significant at the level of significance 90%. This means there is only 1 farmer who really dares to face the risk (risk lover). The remaining 13 farmers showed a b positive coefficient but after statistically tested the results were not significant at 90% or 95% level so that the three respondents were said to have risk neutral behavior.

Table 1. Distribution of Cayenne pepper farmers behavior in Gumukmas District to Price fluctuation generally

No	Farmer Behavior to Face The Risk	Number of Respondent (People)	Percentage (100%)
1.	<i>Risk Lover</i> (Brave)	1	2,56
2.	<i>Risk Neutral</i> (Neutral)	33	84,62
3.	<i>Risk Averter</i> (Not brave)	5	12,82
Total		39	100

Source: Primary data analysis, 2016

Table 1. shows that cayenne farmers in Gumukmas District Jember Regency are 33 people (84.62%) of respondents have risk neutral behavior, while 5 people (12,82%) have reluctant / daring behavior at risk (risk averter), and 1 person (2.56%) of respondents have risky behavior (risk lover).

Most farmers have risk neutral behavior, this can be caused by the inability of farmers in obtaining high prices, this is supported by the fact that most of the farmers planted cayenne pepper in April, as has been previously told planting of cayenne pepper this month tend to has low price considering the supply product in market is very high. Another reason, farmers have been accustomed to price risk, so farmers do not regard price risks as a challenge to worry about.

Hartati's research (2007) shows that the number of family members of farmers is very influential on farmer attitude / behavior in facing the risk, the more number of family members, the farmer is more daring to bear the risk. This indicates that with the increasing number of family members the needs are also increasing, requiring the farmers to work harder, sacrificing more to achieve better results, thereby creating a desire to behave courageously to take the risk. Referring to Hartati's research, it can be understood why farmers are more neutral because the average farmer has a family member of 3 people, while the only respondent who is courageous is Mr. Atmari has 5 family members, dare to risk the fluctuation of the price of cayenne pepper.

Hartati (2007) also stated that the more land that farmers cultivated farmers will be more daring to bear the risk. Referring to the results of this study it is not strange if the results of this study most of the farmers are neutral risk (risk neutral). This is because the average farmers only have land with a moderate scale of more than 0.5 Ha.

In the next explanation the behavior of farmers in dealing with the risk of price fluctuations will be distributed based on the status of land ownership. The results of analysis of cayenne pepper farmers in facing the risk of price fluctuation after distributed based on land ownership status is as much as 25 respondents from 39 respondents have negative b coefficient then from 39 responder is distributed with farmer segmentation with own land ownership as much as 22 respondents, as many as 8 people, farmers with share land ownership status are 5 percent, and farmers who have land ownership as many as 4 people. Farmers with land ownership status have 13 respondents who have negative b coefficient with 2 respondents who have significant negative b2 negative coefficient at 90% significance level can be said that both respondents really do not dare to risk (risk averter), whereas the rest as many as 11 respondents are not significant at 90% significance level or can be said that the respondents are neutral behavior against risk (risk neutral). Farmers with own land ownership have 9 respondents who have positive b coefficient with 1 person of respondent which is very significant at 90% confidence level or can be said that farmers are brave to risk (risk lover) and 8 others have positive b2 coefficient which is not significant at 90% confidence level then it

can be said 8 respondents are neutral to risk (risk neutral).

Farmers with leasehold ownership have 8 respondents with 5 of them have negative b coefficient and 3 others have positive b coefficient. Five (5) farmers who have negative b2 coefficient, 4 of them are not significant at 90% (risk neutral) level of confidence while only 1 person is significant (risk averter). Farmers with positive b coefficient of 3 people are all insignificant on 90% level of confidence (risk neutral).

Farmers with sharecropping land have 5 respondents all of which have negative b coefficients, two of them are significant at 90% confidence level, it means that the two farmers are totally risk-averse while the remaining 3 significant at 90% level of confidence or can be said (risk averter).

Farmers with double land ownership, which are own and rent land have 2 respondents with negative b coefficient and 2 respondents with positive coefficient. After being tested by statistical test all respondents are not significant at the level of confidence 90% then in other words all respondents are neutral to risk (risk neutral).

Table 2. shows that on the land ownership status farmers behave not dare to brave that is, 19 farmers behave neutral to risk (risk neutral), 2 farmers are reluctant / not dare to risk (risk averter), and 1 person dare to risk (risk lover).

Farmers with leasehold ownership status have a daring to neutral attitude that is 1 respondent behave reluctantly (risk averter), and 7 respondents behave neutral (risk neutral).

Farmers with sharecropping ownership status have reluctant / daring risky to neutral behaviors, which are 2 respondents are not risky (risk averter), and 3 other farmers are neutral (risk neutral).

Farmers with two land ownership status at once 4 respondents all behaved neutrally to risk (risk neutral).

Based on table 2 it can be seen that land tenure status has an effect on farmer behavior in facing risk. Farmers with own land ownership status are more daring than farmers who have leasehold ownership status, sharecropping or multiple land ownership status (own land and leasehold).

Table 2. Distribution of Farmers Who Have Behavior Risk Averter, Risk Neutral, Risk Lover based on Status of Land Ownership

Farmers Land Ownership Status	Risk Averter (person)	Behavior Against Risk, Risk Neutral (person)	Risk Lover (person)	Number of people
Own land	2	19	1	22
Leasehold	1	7	-	8
Sharecropping	2	3	-	5
Ownland and Leasehold	-	4	-	4
Total	5	33	1	39
%	12,82%	84,62%	2,56%	100%

Source: Primary data analysis, 2016

Accordance with the results of Hartati (2007) research, that as the owner of the land farmers more dare to bear the risk because the certainty of land use provides a convincing possibility to farmers to invest on their own land. The certainty of land ownership can give farmers the freedom to cultivate and develop their farms, because of a great sense of responsibility for their land. This reluctant behavior is due to the farmers having to pay more for rent, whereas for the sharecropping farmers are affected by the large farming costs imposed on the farmers, while for the fixed yield is divided 50 percent between the landowners and the farmers. If there is a significant price decline then farmers will be in a difficult position, this is the basis of caution of farmers with the status of ownership of sharecropping.

The determination of varieties grown in farming activities also affect farmers in behaving when facing fluctuations in the price of cayenne pepper. The results of the study using the Bernoulli and Neumann-Morgernstern methods show that after being distributed, farmers who plant hybrid varieties are 8 respondents 4 of them have negative b coefficient with 1 respondent farmer having real significance at level of trust 90%, it can be said that the farmer has riskless behavior of risk (risk averter), while 3 others are not significant at 90% level of confidence or can be said that farmer has behavior neutral to risk (risk neutral). The remaining 4 peasants have positive b coefficient that all insignificant at the level of trust 90% or neutral to risk (risk neutral).

Farmers with local varieties as many as 25 farmers, 16 of them have negative b coefficient value with 4 respondents farmers have a significant at 90% level of confidence or can be said

that the farmer has a dare not to risk behavior (risk averter), while 12 other respondents are not significant at 90% level of confidence or can be said that the twelve farmers are neutral to risk (risk neutral). The remaining 9 peasants have positive coefficient value with 1 farmer having significant at 90% level of confidence so it can be said that the respondent farmers are risk-laden (risk lover) and the other 8 farmers are insignificant at the 90% level of confidence so that it can be said that the farmer has a neutral attitude to risk (risk neutral).

Farmers who planted two varieties at once as many as 6 peasants, 5 of them had negative b and 1 person had positive coefficient value all of which were not significant at 90% level of confidence, or it could be said that farmers who planted two varieties at once all behaved neutral to risk (risk neutral).

Table 3 shows that there are differences in behavior among farmers who used hybrid, local and both varieties. Farmers who work on hybrid varieties have neutral behaviors to avoid risk, 7 respondents have risk neutral behavior, and 1 farmer has a risk-aversive behavior.

Farmers with local cayenne pepper varieties have bold behavior at risk until not dare at risk, that is as much as 1 farmer behaved dare to risk (risk lover), 20 farmers have risk neutral behavior, and 4 farmers have behavior not dare to risk (risk averter).

Farmers who work on two varieties simultaneously have a neutral behavior in which all the respondents as much as 6 peasants have a neutral (risk neutral) behavior.

Table 3. Distribution of farmers who have Risk Averter, Risk Neutral, Risk Lover Behavior Based on Planted Cayenne Paper

Jenis Varietas Cabai Rawit	Behavior Toward Risk			Number of People
	Risk Averter (Peo- ple)	Risk Neutral (Peo- ple)	Risk Lover (Peo- ple)	
Hybrid	1	7	-	8
Local	4	20	1	25
Hybrid and Local	-	6	-	6
Total	5	33	1	39
%	12,82%	84,62%	2,56%	

Source: primary data analysis, 2016.

The distributions results indicate that farmers decision to plant varieties have an effect on farmers' behavior in facing the risk of fluctuations in the price of cayenne pepper. Farmers who grow local varieties are more interested than farmers who grow hybrid varieties and farmers who plant two varieties at a time. Farmers who work on local varieties are bolder because the farmer's cost is lower than hybrid. The cost of local variety farming ranges from Rp.7.864.750, - per Ha, while hybrid pepper farmers have to pay Rp. 19.828.000, - for farming. The farmer places the chili commodity as the main crop in his farm, although when the price fluctuates farmers will switch to other commodities even if only temporarily after the price returns to normal or when the price stabilizes the farmers will plant the cayenne pepper again. Meanwhile, the farmers who pursue the cayenne pepper reject the risk because it is influenced by farmers' reluctance to use large capital for the purchase of mulch plastic and non-subsidized fertilizer. The use of fees charged to the use non-subsidized fertilizers is not necessary but for maximum results this is necessary. This neutral behavior of farmers is being perceived by farmers' difficulties if there is a decrease in the price that often attacks the cayenne pepper but it is also based on less hybrid cayenne planting experience, as new hybrid pepper introduced since 2012. Farmers should not have to worry because by planting two varieties the farmer can rely on one of the varieties if the price the other varieties falls.

CONCLUSION

Overall most of the cayenne pepper farmers (84.62 %) behaved neutrally toward the risk of price (risk neutral) the rest, as much as 12.82% of farmers do not dare to risk of price fluctuation the (risk averter), and 2.56% of farmers dare to take risk (risk lover). Based on land owner status, farmers with self-owned land have more bold behavior than farmers who own leasehold, sharecropping, or own land ownership status both own and leasehold. Farmers' decision to varieties related to farmers behavior in the face of price fluctuation risk, farmer who planted local varieties more brave to take the risk than hybrid varieties or farmer who planted both varieties at once.

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