Risk attitude and risk strategy management in red chili business in Langkat Regency North Sumatera Province

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Abstract. Red Chili one of the most potential commodities for cultivation. however, red chili farmers do not always experience profits. There are times when farmers often experience enormous losses. This is related to the risks and uncertainty of farming faced by farmers. Therefore, it is necessary to conduct research on the relationship of risk attitudes and risk management strategies in red chili farming in Langkat Regency, North Sumatra Province. The data used are primary data sourced from questionnaires and interviews with 112 red chili farmers in Langkat Regency. The analytical method used is the Pearson Correlation to see relationship of risk attitudes and risk strategies. The results showed that the correlation between the variable risk attitude and risk management strategy was strong, significant and unidirectional or risk attitude had a significant and negative relationship to the intention to implement risk reduction strategies in red chili farming by farmers.

1. Introduction
Doing business in agriculture is generally known to have high potential, but also has enormous risks. Agricultural risk occurs due to various factors, starting from diversity and climate change, natural disasters, uncertainty in productivity and prices, weakness in infrastructure, market weaknesses and lack of financial services, including limited risk control tools that still barely touch the world of agriculture. The steps taken by farmers are very much influenced by the attitudes and relationships in the local community where they live. For a farmer, it is the community that is the main source of his welfare [1].

In running their farming business, red chili farmers face complex problems, both internal and external. Usually, internal problems are related to problems that can be controlled by farmers, such as the problem of limited land tenure, low technology mastery and low capital. Problems that are beyond the farmer's control relate to problems beyond the farmer's control, which include climate change problems, plant pests (OPT) attacks, as well as problems with fluctuating selling prices. Red chilies are one of the most potential commodities for cultivation. However, red chili farmers do not always experience profits [2].

The individual's choice to act on the basis of risk depends on the individual's assessment [3]. Another key factor is believed to be a risky attitude [4]. The attitude of risk or sometimes referred to the farmer's orientation towards taking risk. The risk attitude can vary from being very risk averse to very risk seeking. Different people have different attitudes to risk which cause them to deal differently
regardless of their individual perceptions. In other research, [5-7] shows that the risk behaviour of farmer may affect their decision on input usage”.

Smallholder risk management strategies dealing uncertainty and risk in different ways. Commonly strategies are avoiding heavy credit dependence or maintaining stability during times of financial hardship, generating other income (off-farm), using external factor like crop insurance, diversifying production or sources of income and saving on personal expenses [8]. The author realizes that farmers can and implement risk management strategies in an effort to reduce the risk of their farming.

2. Materials and methods

2.1. Determination of the research area
Determination of the research area was carried out purposively by considering that Langkat Regency was one of the regions in North Sumatra Province as the centre for producing red chili, but out of the 5 red chili producing districts, Langkat Regency was among the lowest in production, while the land area and productivity could be higher. both from other districts.

2.2. Data collection method the data
Collection method was carried out by collecting primary data by interviewing farmers with a structured questionnaire guide. The data collected in relation to this paper includes: farmer household characteristics, control of land and other assets, cropping patterns, farm input and output structures, and household income structure. The aspect related to farmer attitudes is that farmers who like risk and don't like risk. Regarding the choice of farmers in a strategy to reduce risk, there are several options for efforts that are usually carried out by farmers in reducing the risk of farming red chilies

2.3. Data analysis method
The analysis model used is the Pearson correlation with the following equation:

\[ \text{Correlation} = r_{xy} = \frac{n \sum x_i y_i - \sum x_i \sum y_i}{\sqrt{n \sum x_i^2 - (\sum x_i)^2} \cdot \sqrt{n \sum y_i^2 - (\sum y_i)^2}} \]  

Description :
\[ r_{xy} \] : correlation coefficient r Pearson
\[ n \] : number of samples / observations
\[ x \] : independent variable / first variable
\[ y \] : dependent variable / second variable

3. Results and discussion

3.1. Characteristics of respondents
The socio-demographic description of the research respondents consisted of 112 farmers spread across 4 (four) Districts in Langkat Regency, namely, Stabat, Secanggang, Kuala, and Sei Bingai Districts who cultivate red chili. Following are the results of the data processing of farmer characteristics seen from age, level of formal education and farming experience of each respondent farmer can be seen in table 1.

The age of the farmers who became respondents ranged from 38 - 61 years, with the most respondent farmers ranging from 40 to 49 years as many as 50.89% because this age is the productive age for farmers in conducting red chili farming. For those under 40 years old, the percentage of respondent farmers is 17.86%. This is because those under 40 years old still do a lot of work in other business sectors besides being farmers.
The education of the most respondents is secondary school graduates (SMA) with a percentage of 56.25% and for farmers with formal education levels below secondary school as much as 36.61%. The education level of farmers influences farmers in classifying farmers who are risk averse and those who like to risk.

Table 1. Characteristics of respondents

| Information                  | Category                  | Total (Person) | Percentage (%) |
|------------------------------|---------------------------|----------------|----------------|
| Age (Years)                  | 24 – 39                   | 20             | 17.86          |
|                              | 40 – 49                   | 57             | 50.89          |
|                              | 50 – 76                   | 35             | 31.25          |
| Education                    | Not School- Junior High school | 41         | 36.61          |
|                              | Senior High School        | 63             | 56.25          |
|                              | Higher Education          | 8              | 7.14           |
| Duration of Farming (Years)  | 2 – 10                    | 37             | 33.04          |
|                              | 11 – 20                   | 45             | 40.18          |
|                              | 21 – 40                   | 30             | 26.79          |

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For the length of farming, the average respondent farmer ranges from 10 to 20 years. Most of the farmers as much as 40.18% are farmers who cultivate red chilies between 11 to 20 years, the remaining 33.4% who have farming experience under 1 years and as many as 26.79% of respondent farmers who have experience in red chili farming over 20 years. Judging from the results of data processing for farming experience, it shows that farmers in Langkat Regency already have sufficient experience in farming. So it can be said that farmers already have sufficient experience and knowledge about agricultural risks.

Table 2. Risk perception of risk management strategy

| Information                  | Category | Total (Persons) | Percentage (%) |
|------------------------------|----------|-----------------|----------------|
| Perceived Risk               | Low      | 89              | 79.46          |
|                              | Medium   | 22              | 19.64          |
|                              | High     | 1               | 0.89           |
| Risk Management Strategy     | Not Apply| 91              | 81.25          |
|                              | May Apply| 2               | 1.79           |
|                              | Apply    | 19              | 16.96          |

Based on the results of field research conducted on red chili farmers in Langkat Regency, it was found that the risk attitude of red chili rejects risk (Risk Averse farmers tends not to) and the risk
management strategies obtained from these farmers tend not to carry out or apply any strategies because red chili farmers in Langkat Regency have anticipated the impact of the risks. (preventive) which will occur before doing red chili farming.

3.2. Attitudes toward risk management strategy
Based on the results of the Pearson Correlation data analysis performed using SSPS, the following results are obtained:

| Risk Attitude | Mean  | Std. Deviation | N  |
|---------------|-------|----------------|----|
| Strategy      | 2.7021| 0.76204        | 112|

From the table above, it can be seen that the Pearson correlation coefficient is -0.630 **. This means that the magnitude of the correlation between the Risk Attitude and Management Strategy variables is -0.630 or strong because it is close to number 1. The two-star sign (**) means that the correlation is significant at the significance level of 0.01 and has the possibility of two directions (2-tailed).

Based on the existing criteria, the relationship between the two variables is significant because the significance value is 0.000 < 0.001. (If there is no two-star sign, the significance is automatically 0.05). The relationship between the two variables has two directions (2-tailed), which can be unidirectional (positive) and unidirectional (negative).

See the direction of the correlation between two variables. The direction of correlation is seen from the number of positive or negative correlation coefficients. Because the correlation coefficient value is negative, namely -0.630; then the correlation of the two variables is not unidirectional. It is called Negative Correlation if two (or more) correlated variables go in opposite, contradicting, or opposite directions. This means that an increase or increase in variable X, for example, will be followed by a decrease or decrease in variable Y. in this research is means that if the value of the number of risk attitudes is high, the value of the strategy will decrease and / or vice versa. The correlation between the Risk Attitude and Management Strategy variables is strong, significant and unidirectional or the risk attitude has a significant and negative relationship to the intention to implement a risk reduction strategy in red chili farming by farmers.

3.3. Relationship of risk attitudes and farm risk management strategies
In this study, the variable risk attitude was measured by various statements about farm risk-taking behaviour. Farmers as respondents need to rate their agreement with these statements on a five-point there is 1 - 5 (strongly disagree - strongly agree).

The risk attitude negatively influences strategy; that is, farmers agree with the statement that they are less willing to take risks (risk averse) which results in a greater tendency to earn off-farm income, to deal with risks with special measures and to maintain financial stability. Thus, we can classify two
risk management approaches farmers primarily, risk averse tend to passively handle risk, by maintaining stability, ensuring off-farm income or working harder and holding back personal expenses in times of trouble. Meanwhile who are more willing to accept risk (risk seeking proactive farmers) take approach to risk, use external risk management, namely diversifying production and sources of income, and optimizing their agriculture.

The results of this study are in line with research conducted by [9], showing that most of the small farmers in developing countries are reluctant to take risks. The behaviour of farmers in facing agricultural risks shows that most farmers are risk averse, while farmers who are risk neutral are 23.75% and lovers of the least risk (7.5%), the attitude to avoid risks to farmers is to reduce the risk of pest attack. [10] stated that farmers' behaviour towards farming risks is still risk averse. The fact that a large sample of farmers is risk averse is understandable because the life of rural farmers is so close to the border of substances and erratic weather. In addition, farmers have a different character, namely trying to avoid failure rather than getting bigger profits by taking risks.

The success of agricultural management is closely related to the willingness of farmers to take risks, which reflects their willingness to use more inputs than other farmers in general. As technology advances today and in the future, farmers are expected to become risk takers instead of avoiding risks because they must have a more optimistic and bright future. Distinction can be made between farmers who are willing to take risks and farmers who are not willing to take risks [11]. Therefore, the farmers' statement of risk averse looking for risk (risk seeking) becomes clear. Increasingly, risk tend not to adopt risk management strategies -ex-ante averse farmers and rely more unactioned-post curative. On the other hand, the more farmers who seek risk (risk seeking), the more likely it is that they will apply management strategies before taking their agricultural actions (ex-ante).

One explanation for the obvious statement is that farmers who are more willing to take risks have a greater need to protect themselves against these risks and are thus more likely to adopt certain risk management strategies. This is especially true for external risk management strategies, as farmers can enable them to take more risks when they are confident and therefore certain at a minimum price or income. In terms of agricultural optimization, farmers can be very risk averse, unwilling to take on the financial risks associated with modernization and / or scaling up, even if such strategies can reduce operational risks and increase returns. Given the complexity and interdependence of different risks, it is often the fact that managing one risk carries the risk of another. Finally, it could be that the farmer balances risks: farmers who are more willing to take certain specific risks at the same time manage other collateral risks to balance the total risk.

4. Conclusions
Risk attitude has a significant negative relationship to the risk management strategy of farming, where farmers who reject risk (risk averse) do not strategies in the implementation of red chili farming, while farmers who like risk (strategy of risk seeking apply risk management) will apply the risk management red chili farming. The government should be able to understand the needs of farmers and the risks faced by farmers in cultivating red chilies. Agricultural risks occur due to various factors, starting from diversity and climate change, the occurrence of natural disasters, uncertainty in productivity and prices, weakness in infrastructure, market weaknesses and lack of financial services, including limited risk control tools that only touch the world of agriculture. Increasing human resources in agricultural management and regulations in applying market price standards so that red chili farmers are not disadvantaged.

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