Risk Analysis of Tobacco Farming
at South OKU Regency South Sumatera Province

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Abstract

This study is aimed to analyse the risk of tobacco farming at South OKU, South Sumatera Province, Indonesia. The location is determined by purposive on South Warkuk Ranau, South OKU Regency, South Sumatera Province, Indonesia. The method used of this research is survey method, and simple random sampling as the sample method. Samples taken were as many as 25 people from a total of 63 tobacco farmers at South OKU. The result showed that tobacco farming in South OKU Regency, resulted in average income of Rp. 54.367.880. from these calculations it can be seen that the amount of standard deviation of Rp.15.718.548,16657. The coefficient of variation obtained is 0.2891146053 which means the CV is less than 0.5 ($0.28 \leq 0.5$) and L more than (22.930.783.666859 ≥ 0). This indicated that tobacco farming in South OKU Regency is protected from loss.

Keywords : Risk analysis, tobacco farming, protected from loss.

Abstrak

Penelitian ini bertujuan untuk menganalisis resiko usahatani tembakau di Kabupaten OKU Selatan, Propinsi Sumatera Selatan, Indonesia. Lokasi penelitian dipilih secara sengaja di Kecamatan Warkuk Ranau Selatan, Kabupaten OKU Selatan, Propinsi Sumatera Selatan, Indonesia. Metode penelitian yang digunakan dalam penelitian adalah metode survey dengan metode penarikan contoh menggunakan metode acak sederhana, Sampel yang diambil adalah sebanyak 25 orang dari total petani tembakau yang berjumlah sebanyak 63 orang. Hasil penelitian menunjukkan bahwa usahatani tembakau di Kabupaten OKU Selatan memiliki rata-rata pendapatan sebesar Rp. 54.367.880. Dari perhitungan tersebut maka standar deviasinya dari Rp.15.718.548,16657. Memiliki koefisien variasi sebesar 0.2891146053, yang artinya CV lebih kecil dari 0.5 (0.28 ≤ 0.5) dan L memiliki nilai lebih besar dari 0 (22.930.783.666859 ≥ 0). Hal ini menunjukkan bahwa usahatani tembakau di Kabupaten OKU Selatan terhindar dari kerugian.

Kata kunci: Analisis resiko, usahatani tembakau, terhindar dari kerugian

1. Introduction

Indonesia is an agricultural country that is rich in natural resources and the agricultural sector that supports its economic growth. The agricultural sectors consists of several sub sectors including the food crop and horticulture, plantation, forestry, fisheries and livestock sub sectors. All these sub sectors have a large contribution to the economy, including product contribution, market contribution, food contribution, employment contribution, and export earning contribution. An important role in agricultural development is a strategic role that can be described through these contributions which are manifested such as the formation of capital, provision of food and raw materials for industry, animal feed, bioenergy, absorbing labor and sources and environmental preservation through farming practices (Daryanto, 2012).

The plantation subsector is one of the sub sectors that bring in foreign exchange quite high in Indonesia, one of the plantation commodities that is widely developed in Indonesia today, especially in the highland areas, is tobacco plants (Soekartawi, 2011). Tobacco is one of the important trading commodities in the world, including in Indonesia. The main traded tobacco products are tobacco leaves and cigarettes. Tobacco produces high value products so that many countries including Indonesia, cultivate them especially in the highlands. Tobacco and cigarettes are high value products that are one of the sources of government revenues in the form of taxes and excise, sources of farmers income and community development (Suharti, 2014). Tobacco in Indonesia is a mainstay export commodity where up to 2016 has contributed as much as 96,65%. Indonesian income from tobacco products industry until 2016 from the payment of excise is Rp.138,69 trilyun or 95.65% of the total excise. Uptake of labor in the manufactured and cigarettes industry sector reaches 4,28 million peoples and around the plantation reaches 1,7 million peoples.

South OKU is one of regency in South Sumatera that currently developing tobacco farming. Farmers in South OKU have been trying coffee as their main livelihood, but now the price of coffee is getting cheaper. Much tobacco is cultivated especially in Southern OKU with productivity of 2.4 tons per hectare in 2016. The land area, production and productivity of tobacco at South OKU in 2017 can be seen in Table 1 below :

Table 1. The land area, production and productivity of tobacco at South OKU in 2017

No	District	Land area (Ha)	Production (ton)	Productivity (ton/ha)
1.	Mekakau Ilir	-	-	-
2.	Banding Agung	53,00	42,40	0,80
3.	**Warkuk Ranau Selatan**	**159,00**	**127.20**	**0,80**
4.	BPR Ranau Tengah	83,00	66,40	0,80
5.	Sungai Are	-	-	-
6.	Buay Pemaca	-	-	-
7.	Simpang	-	-	-
8.	Buana Pemaca	-	-	-
9.	Muaradua	-	-	-
10.	Buay Rawan	-	-	-
11.	Buay Sandang Aji	-	-	-
12.	Kisam Ilir	-	-	-
13.	Tiga Dihaji	-	-	-
14.	Buay Runjung	-	-	-
15.	Runjung Agung	-	-	-
16.	Sindang Danau	-	-	-
17.	Kisam Tinggi	-	-	-
18.	Muaradua kisam	-	-	-
19.	Pulau Beringin	-	-	-
	Amount	295,00	235,80	2,40

Source: Departement of Agriculture of South OKU, 2018

Table 1 shown the land area, production and productivity of tobacco at South OKU in 2016. Farmers in Warkuk Ranau have planted coffee as a staple farm, but now many farmers have planted tobacco because of its higher economic price. Now the price of farmers tobacco is bought with the price Rp.50.000/kg, higher than the price of coffee. Besides that the climate in South OKU is very suitable for planting tobacco. Farmers now expect a guaranteed price from the buyer, the availability of sufficient production facilities and the sustainability of a promising business. Tobacco farming is now starting to develop and for every business that starts to develop, of course is always faced with a variety of risk including considerable farming costs, availability of labor and price certainty. This is an interesting thing to study further, namely about the risk analysis of tobacco farming income at Warkuk Ranau, South OKU of South Sumatera Indonesia.

2. Literature Review

Runtiko, A.G., et al (2018) in their research explained that in Temanggung, there is a type of tobacco with high quality and very distinctive aroma is known, with a selling price that is very high which is Rp.500.000/kg or above the average price of ordinary tobacco which is Rp.100.000/kg. Furthermore, Kempo, A (2017) in his research in Jogjakarta, about the analysis of feasibility of tobacco farming in Kalasan District, declare that the income of tobacco farming is Rp.13.110.851/ha/year and the feasibility is R/C 1,97.

Fanani, A, et al (2015) in their research about the effect of the contract farming of risk tobacco farming in Bojonegoro District, East Java explain that the tobacco farming faces many risks, especially price and production risk. The results showed that the production risk faced by farmers who do contract farming is lower than non contract farming and the contract farming had statistically an significant effect to reduce the risk of tobacco farming. Development of tobacco farming in Bojonegoro still need contract farming to mitigate risks.

Fauziah, E.,, et al (2010) in their research about the influence of risk preference of farmer production in tobacco productivity, using the stocastical frontier production function by means of heteroskedastic error structure reported that risk preferences and the consequences on tobacco farming in Pamekasan. Frontier production function model with heteroskedastic error structure estimated by maximume likelihood estimation developed by Kumbhakar was adopted to analyze the goals. This model can capture the effect of risk preference on input allocation, inefficiency and productivity. Four hundred fifty samples were drawn by cluster sampling method.The results show that risk preferences were not depended on agroecosystem and farming system, but they were determined by farm size. Most of the farmers prefered to avoid production risk. The consequences were input allocation under optimum condition, technical and allocative efficiencies at a low level, and depleted productivity.

Herminingsih and Rokhani (2014) in their research, examined the factors that influence the behavior of farmers to the risk of climate change in the development of tobacco farming in Jember Regency. Factors that are suspected to influence the behavior of farmers are age, formal education, non-formal education, experience, number of family members, land area, price ratio, frequency of crop failure, and type of land. The results showed that the factors that significantly affected farmer's behavior were age, formal education and experience with successive significance of 0.048; 0.015 and 0.011. Non-formal education factors, number of

family members, land area, price ratios, frequency of crop failure, and type of land have no significant effect.

Risk averse, risk neutral and risk taker were three criteria for farmers' behavior in facing risks, this is in accordance with Kadarsan (1995), each farmer has different behaviors in dealing with the risks faced. Risk averse farmers are farmers who are not ready to face losses. Farmers will expect higher income if they face high risks. Risk behavior takers in farmers who dare to take the opportunity even though the yields are low. Low income faced by farmers does not affect the desire of farmers to carry out their production activities. Risk neutral farmers exhibit behavior that is not sensitive to the size or the risk being faced. Variations differ based on attitude toward risk behavior. A good farmer is a farmer who is a risk taker. Some risks that often occur in agriculture and can reduce the level of income of farmers, namely:

a. Risk of production results

Fluctuations in production results in agriculture can be caused by uncontrolled events. Usually caused by extreme natural conditions such as rainfall, climate, weather, and pest and disease attacks. Production must also pay attention to appropriate technology to maximize profits from optimal production results.

b. Price or market risk

Price risk can be influenced by changes in production prices or the inputs used. This risk arises when the production process is already running. This risk is more caused by the long-term production process in agriculture, so that the need for input each period has a different price. Then there are differences in demand in the domestic and international consumer lines.

c. Institutional Risk

Institutions or institutions affect agricultural output through policies and regulations. /Government policy in maintaining the stability of the production process, distribution, and the price of inputs and outputs needed to meet farmers' production needs. Fluctuations in the prices of inputs and outputs of agriculture can affect production costs.

d. Human risk

This risk is caused by human behavior in the production process. Human resources need to be considered to produce optimal output. Human morals can cause losses such as negligence, causing fire, theft, and damage to production facilities.

e. Financial risk

Financial risk is the impact caused by the way farmers manage their finances. Owned capital can be used optimally to produce output. Capital loans are mostly done by farmers to provide a balanced benefit in the form of profits between managers and owners of capital. The emergence of risks in agriculture can also be caused by internal and external factors. External factors from the agricultural sector have a greater effect than internal factors. For example, anomalies of climate change that occur today have direct implications for farming activities in Indonesia. Climate change which is increasingly unpredictable by farmers, causes frequent occurrence of adverse events that are detrimental to farmers such as inadequate or damaged irrigation networks, farm roads, and other agricultural infrastructure. Furthermore, Susilowati (2018) states that information about risks that need to be considered are two dimensions of risk that need to be carefully measured, including the frequency and number of each dimension in the form of :

1. Average value in a budget period.
2. Variation of the expected value from the actual.

3. The overall impact of the losses that may occur.

3. Research Methods

This research has been done in South Warkuk Ranau, South OKU of South Sumatera, Indonesia. Determination of location is done delivery when the location is a tobacco farming centre in South Sumatera, especially South OKU. Research is done at November 2018. The research method is survey method, and the sampling method is simple random sampling method with 25 tobacco farmers taken from 63 tobacco farmers as the samples.

The amount of income of tobacco farming can be calculated using the this following formula :

Pd = Pn - BT
Pn = Y x Hy
BT = BTp + BV

Where :

Pd = The income of tobacco farming (Rp/ha/year)
Pn = Revenue (Rp/ha/year)
Y = Number of tobacco production (Rp/ha/year)
Hy = Selling price of tobacco (Rp/Kg)
BT = Total cost of tobacco farming (Rp/ha/year)
BTp = Fixed cost of tobacco farming (Rp/ha/year)
BV = Variable cost of tobacco farming (Rp/ha/year)

To analyse the risk of tobacco farming, can be calculated as follows:

$$E = \frac{\sum_{i=1}^{n} Ei}{n}$$

$$CV = \frac{V}{E}$$

$$V^2 = \frac{\sum_{i=1}^{n} (Ei - E)^2}{(n-1)}$$

$$V = \sqrt{V^2}$$

$$L = E - 2V$$

Information :
E = Average value of revenue (Rp)
Ei= Value of the i-th earnings (Rp)
n = Number of Samples

CV = Coefficient of Variation
V = Standard deviation
L = Lower limit of revenue(Rp)

Rule of decision according to Hernanto (2012) :
1. If CV> 0.5 then the value of L <0 = tobacco farming opportunity to lose
2. If CV ≤ 0.5 then the value of L ≥ 0 = tobacco farming avoid the loss

4. Results

4.1. The Cost of Tobacco Farming

The cost of tobacco farming production is all costs that must be incurred in the tobacco farming consisting of fixed costs and variable costs. The variable cost of tobacco farming is the cost of seeds, medicines and labor. While fixed costs is the depreciation costs. The composition of fixed costs and variable costs of the tobacco farming results in total cost, as can be presented in Table 2 below :

Table 2. The average cost of tobacco farming production in South Warkuk Ranau, South OKU

No	Items	Amount (Rp/ha/year)
1	Fixed cost	
	- Depreciation cost	598.760
2	Variables cost	
	a. Production cost	
	- Seed	224.800
	- Fertilizer	1.676.800
	- Pesticide	424.000
	- Fungicide	498.560
	- Container	93.200
	b. Employment cost	14.116.000
	The amount of variable cost	17.033.360
	The amount of production cost	17.632.120

Sumber : Primary data, 2017

Table 2 shown that the depreciation cost of tobacco farming is Rp.598.760/ha/year. The cost of seeds is Rp. 224.800/ha/year , and the cost of fertilizer is Rp. 1.676.800/ha/year. There were 3 kinds of fertilizer using on tobacco farming, organic fertilizer (kompos), trycodermae fertilizer and improbio fertilizer. The cost of pesticide is Rp. 424.000/ha/year, and the cost of fungicide is   Rp.498.560/ha/year. The cost of employment quite expensive, Rp. 14.116.000/ha/year.

4.2. Production and Revenue

All the tobacco farmers sell their tobacco at the price Rp.50.000/kg. The period of tobacco harvest is about 4 – 4,5 month. In one tobacco tree will had a many leaves with so many grid and quality of every grid. The average revenue of tobacco farming is Rp.72.000.000/ha/year and the production is about 1.440 kg/ha/year. The production, price and revenue of tobacco farming can be seen in Table 3 below :

Table 3. The average of production, price and revenue of tobacco farming in South Warkuk Ranau, South OKU.

No	Item	Amount
1	Production (kg/ha)	1.440
2	Price (Rp/kg)	50.000
3	Revenue (Rp/ha/year)	72.000.000

Source : Primary data, 2017

Table 3 shown that the average of tobacco production is 1.440 kg/ha with the price Rp. 50.000/kg so the average revenue of tobacco farming is Rp. 72.000.000/ha/year.

4.3. The Analysis of Tobacco Farming Income

The farming income can be calculated from the tobacco farming revenue minus the tobacco farming cost in a year. The tobacco farming income can be seen in Table 4 below :

Table 4. The average of tobacco farming income in South Warkuk Ranau, South OKU.

No	Item	Amount
1	Revenue (Rp/ha/year)	72.000.000
2	Total production cost (Rp/ha/year)	17.632.120
3	Income (Rp/ha/year)	54.367.880

Source: Primary data, 2017

4.4. The Risk of Tobacco Farming Income

The income of tobacco farmer will attrack the behavior of farmers to faced the risk. Farmers in every purposes got to maximize their income and the amount of the risk of tobacco farming in South Warkuk Ranau, South OKU can be seen at Table 5 below :

Table 5. The risk of tobacco farming income in South Warkuk Ranau, South OKU.

No	Item	Amount
1	Average of income (Y)	54.367.880
2	Samples (n)	25
3	Standar deviation (V)	15.718.548.16657
4	Coeficient of variation (CV)	0,28
5	Income limitation (L)	22.930.783.666859

Source: Primary data, 2017

Table 5 shows that the tobacco farming income coefficient of variation less than 0.5 (0,28 ≤ 0.5) and L over (22.930.783.666859≥ 0). This means that the tobacco farming is likely to avoid losses. Revenue owned by tobacco farming in the research location is quite high that is Rp.72.000.000 a year. High enough income will affect the behavior of farmers in facing risks, where they can carry out various strategies in dealing with problems that during the tobacco business. With considerable income, some risks that farmers can avoid include weather conditions, high costs of farming, and human resources. Compared with Runtiko, A.F., et al (2018) in their research explained that in Temanggung, there is a type of tobacco with high quality and very distinctive aroma is known, with a selling price that is very high which is Rp.500.000/kg or above the average price of ordinary tobacco which is Rp.100.000/kg, higher than the tobacco price in Warkuk Ranau, South OKU. The income of tobacco farmers in is Rp. 23.997, 011/year, lower than the income of tobacco farming in South Warkuk Ranau, South OKU. Another research by Kempo, A (2017) in Kalasan District, shown that the income of tobacco farming is Rp.13.110.851/ha/year. The problem between tobacco farmers to added their income can solved by the contract farming. Fanani, A et al (2015), in their research about the effect of the contract farming of risk tobacco farming in Bojonegoro District, East Java explain that the tobacco farming faces many risks, especially price and production risk. The results showed that the production risk faced by farmers who do contract farming is lower than non contract farming and the contract farming had statistically an significant effect to reduce the risk of tobacco farming.

5. Conclusion

The average of tobacco farming income in South Warkuk Ranau, South OKU Regency of South Sumatera is Rp. 54.367.880 /ha/year. The tobacco farming in South Warkuk Ranau, South OKU Regency has a coefisien variation less than 0,5 (0,28 $\leq$ 0,5) and L bigger than (22.930.783.666859 ≥ 0). It means that the tobacco farming likely to avoid from losses.

6. References

Daryanto. (2012). The Strategic Role of Agricultural Development. Research journal. University of Jember. Jember.

Fanani, A, (2015) . Effect of Partnership on Risk of Tobacco Farmers in Bojonegoro District, East Java Province. Journal of Management and Agribusiness, Volume 12, Number. 3, Surabaya.

Fauziyah, E., Hartoyo, S., Kusnadi, N., and Kuntjoro, S.U., (2010). *The Influence of Risk Preference of Farmer Production in Tobacco Productivity.* Bogor Agricultural Institute. Bogor.

Hernanto. (2012). *Risk Revenue Analysis. Institute for Economic and Social Information and Education Research* (LP3ES). Jakarta.

Herminingsih and Rokhani, (2014). *The Effects of Climate Change on Tobacco Farmer Behavior in Jember Regency.* Journal of Mathematics, Science, and Technology, Volume 15, Number 1, March 2014, 42-51. University of Jember. Jember.

Kadarsan, (1995). *Risks and Uncertainties in Agribusiness, Theory and Applications*. Jakarta. Raja Grafindo Persada.

Kempo, A, (2017)**.** *Feasibility Analysis of Smallholder Tobacco Farming in Kalasan District, Sleman Regency, Special Region of Yogyakarta.* Agritas Scientific Journal. Vol 1. No1. Yogyakarta.

Runtiko, A.G., Haryadi, T and Witjaksono, (2018), *Exploration of Local Tourism of Srinthil Tobacco In Slope Gunung Sumbing*. Kawistara, Social and humanities scientific journal, Vol 3 No.8. Animal Husbandry Science and Industry Study Program, Faculty of Animal Husbandry, Gadjah Mada University. Department of Agriculture Socio-Economic Faculty of Agriculture, Gadjah Mada University. Yogyakarta.

Suharti. (2014). *Tobacco Cultivation*. Agriculture Faculty Publisher. University of Tamansiswa. Yogyakarta.

Susilowati, F and Suryanto, (2018). *Tobacco Production Risk Management Facing Climate Change in Temanggung Regency. R*egional Development. Journal and Participatory planning. Temanggung.

Soekartawi, (1993). *Risks and Uncertainties in Agribusiness*. Theory and Applications. Raja Grafindo Persada. Jakarta.

Soekartawi. (2011*). Agricultural Science and Research for Small Farmer Development.* University of Indonesia. UI Press. Jakarta.

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