RISK ANALYSIS OF CATFISH CULTIVATION IN SMALL BUSINESSES SCALE POOLS IN BANJAR DISTRICT OF SOUTH KALIMANTAN, INDONESIA

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ABSTRACT

The Catfish cultivators in ponds mostly are the small scale businesses, small scale businesses with the limited capital which have the susceptible competition, with medium and large scale businesses, the small scale businesses affected by changes of the prices and the fish production, when the fish prices is low the cultivators cannot sell them because will get losses, likewise if the fish production is low due to the fish death. The purpose of the study is to analyze the risks faced by the catfish aquaculture in ponds in the small scale business in Banjar Regency. The analytical methods used in this study are: the variance analysis, the standard deviation analysis, and the lower limit of the highest yield (L) analysis. The results of the analysis of the production risk and income risk is that both have a CV value of less than 0.50 and the lower limit value (L) > 0 means that there is a chance to get losses at will be endured by the business.

KEY WORDS

Catfish, risk, pond, business.

The fish culture in pond is one of the businesses that can be developed in the wetlands area as one of the source of income. This activity will not destroy the wetlands ecosystem, but it can optimize the wetlands potency. The ponds owned by cultivators vary from the large to the small ones, which depend on the capital they have, likewise the fish that are kept. Generally, the kinds of fish they keep are the fish that are needed by the people economically such as the catfish, carp, and tilapia.

Banjar Regency is one of the fish culture in ponds producer. This regency has a land of area of about 4,688.50 km2, with the population of 498,085. It is divided into 19 sub-districts that consist of 290 villages or urban villages. Banjar Regency has a potential aquaculture. The highest fish culture in ponds production is the catfish (Fisheries and Marine Service 2015). The catfish culture cultivators in this regency work on the various business scale, that is large scale business, medium scale business, small scale business and micro scale business.

Table 1 – Number of Pond Cultivation Fisheries Households by Category of Business Size in Banjar Regency

No	Districts	District Number (RTP	The Category of Business Size Based on land area			
			< 0,1 ha (<1000 m2)	0,1-0,3 Ha (1000-3000 m2)	0,3-0,5 Ha (3000-5000 m2)	>0,5 Ha (>5000 m2)
1	Banjar	671	73	406	99	93

Source: Fisheries and Marine Service Statistics, 2015.

According to the data in Banjar Regency, the land of the fish culture ranges from < 0.1 ha to 0.5 ha. So, based on the area, 73 RTP are classified as the micro scale business, 505 RTP are classified as the small scale business, 93 RTP are classified as the medium one, while the large one has not been noted. The small scale production does not spend much investment cost. In general, the small scale cultivators do not run up the investment cost for

the machinery and food because the ponds they build are the soil-based pond (Febrianty, 2018).

The most catfish culture business in Banjar Regency is the small scale business. They have a land of area of about 2,500 m2 with 2-8 ponds in it. Generally, the fish culture cultivators are the transmigrants from Lombok Island. The government gave them the land when they arrived at South Kalimantan.

The small scale business with the limited capital owned by the cultivators is susceptible competition with the medium and the large scale business. The small scale business is affected by the changes of the price and the production. When the fish price is low, so they cannot sell the fish because they will get losses, likewise if the production is low because of the fish deaths.

Based on the background of the catfish culture in ponds condition in the small scale business, it can be defined that the problem is how the small scale business facing the risks in carrying out the catfish culture business in ponds in Banjar Regency. The purpose of the research is to analysis the risks the catfish culture facing in Banjar Regency.

METHODS OF RESEARCH

The risk analysis used for this research – analysis of variance, standard deviation and lower limit of the highest result Sari (2021). Wahyuni et al. (2020) wrote in his research that the measure of variance and standard deviation can be used to measure the spread of risk from observational data with the expected average result using the probability parameters of investment and the size of variance and standard deviation (standard deviation) used as an indicator of the risk.

The size of the variance (variance) can be calculated by the formula:

$$V\alpha^2 = \frac{\sum(Q - Q_i)^2}{n - 1} \qquad (1)$$

Where: $V\alpha^2$ = Variety (variance), Q = Production (kg)/Revenue (Rp), Q_i = Average production yield (kg/average income (Rp), n = Number of cultivators sample.

According to Widiyanto (2013), the standard deviation is a measure of the variability of the scores based on the square of the deviation of each score from the arithmetic mean. The standard deviation is the root of the variance value which is the square of the standard deviation value.

The standard deviation can be calculated by the formula:

$$V\alpha = \sqrt{V\alpha^2} \qquad (2)$$

The higher the value of variance ($V\alpha^2$) and standard deviation ($V\alpha$), the higher the level of risk. According to Alam and Aida (2017), the greater the value of variance and standard deviation, the greater the level of quantity risk. The variance and standard deviation are used to measure production risk and income.

The lower limit (L) shows the lowest value of production, price and income that may be received by catfish farmers. The formula for calculating the lower limit (L) is:

$$L = Q_i - 2V\alpha \qquad (3)$$

Where: L = Lower limit value, Q_i = Average production yield (tail)/average income (Rp).

The relationship between the lower limit of the highest yield (L) and the coefficient of variation (KV) is: If KV > 0.5 then L < 0 it means that there is a chance of loss that will be suffered by a business; If KV < 0.5 then L > 0 means that there is a chance of loss that will always avoid losses.

RESULTS AND DISCUSSION

The risk data analysis has various approaches or techniques that can be used to measure variance analysis, standard deviation analysis and the lower limit of the highest yield, so that there is an income risk and income risk as follows.

Production risk is to see how this business opportunity faces variations in the resulting production so that it can be seen whether the business has a risk of loss or vice versa. The results of data analysis can be seen in Table 2.

Table 2 – Production Risk in Catfish Raising Business in Banjar Regency

Description	Production Risk
Average	8734,615385
Variety (Va2)	19801879,37
Standard Deviation (Va)	4449,930266
Coefficient of Variance (KV)	0,509459211
Lower Limit (L)	-165,245147

Source: Primary data processed, 2022.

Small-scale catfish farming business has an average production of 8,735 kg/production. The variance of the variance is 1980-1879. The standard deviation value (standard deviation) is 4450; the standard deviation value is defined as the level of production risk faced by small-scale catfish cultivators in each production cycle in the future. According to Alam and Aida (2017) the greater the value of variance and standard deviation, the greater the level of quantity risk. The value of the coefficient of variation in the risk of catfish production is 0.51 meaning that every 1 kg obtained by catfish cultivators will result in a risk of 0.51 kg. The coefficient of variation is a measure of the relative risk obtained from a cultivation business, the higher the coefficient of variation, the higher the risk in a cultivation business and vice versa. Based on the results of the analysis, the coefficient of variation (KV) > 0.50 and the lower limit value (L) < 0 it can be said that the catfish farming business in small-scale ponds has the opportunity to experience losses experienced by a business. The results of this study are contrary to research from Marlina (2021) with the title of Research on Risk Analysis of Dumbo Catfish Cultivation in Kota Gajah District, Central Lampung Regency. The CV value of production risk is 0.04 and the lower limit (L) is 2.449.33 kg. The CV value is less than 0.50 and the lower limit value (L) > 0 means a business will always avoid losses.

Table 3 – Income Risk of Catfish Growing in Banjar Regency

Description	Income Risk
Average	169.107.692,3
Variety (Va2)	7,66412E+15
Standard Deviation (Va)	87544957,23
Coefficient of Variance (KV)	0,517687611
Lower Limit (L)	-5982222,156

Source: Primary data processed, 2022.

The results of the analysis of field data obtained from small-scale catfish cultivators in ponds in Banjar Regency were influenced by the high mortality rate of catfish fingerlings. On average, the catfish cultivators experience mortality in fish seeds of about 20% - 75% due to poor water quality resulting in death of catfish fry and erratic weather factors can affect production in catfish. The impact of weather on fishery business can be seen from the results of Febrianty's (2021) research entitled The Impact of Floods on Fish Cultivation Business in Floating Net Cages in Sungai Alang Village, Karang Intan District, Banjar Regency, South Kalimantan. The results of the analysis of the impact of flooding on fish cultivation in floating net cages in Sungai Alang village: The economic impacts that occur are the loss of cages, loss of fish and damage to nets which result in farmers' losses. This is in

line with the results of Mustika's research (2021) The risks of catfish farming business include limited and easy-to-dead seed supply, late arrival of material, limited supply of fish feed and the level of complexity of post-harvest handling and flooding that hit Banjar Regency in early 2021.

In the cultivation of catfish enlargement and several sources of income risk, such as the uncertain amount of production and the fluctuating price of catfish. Production greatly affects income because if production decreases, income will also decrease.

Small-scale catfish farming business has an average income of Rp. 169,107,692 / production, the value of variance is 7,66412E+15. The standard deviation value (standard deviation) is 87,544,957, the standard deviation value is defined as the level of income risk faced by small-scale catfish cultivators in each production cycle in the future. According to Alam and Aida (2017) the greater the value of variance and standard deviation, the greater the level of quantity risk. The value of the risk coefficient of variation in catfish income is 0.52, meaning that every 1 kg obtained by catfish cultivators will result in a risk of 0.52 kg. The value of the coefficient of variation is a measure of the relative risk obtained from a cultivation business, the higher the value of the coefficient of variation, the higher the risk in a cultivation business and vice versa. Based on the results of the analysis, the coefficient of variation (KV) > 0.50 and the lower limit value (L) < 0 it can be said that the catfish farming business in small-scale ponds has the opportunity to experience losses experienced by a business. The results of Wahyuni's research (2018) entitled Break Even Point Analysis and Business Risks of Tilapia (Oreochromis niloticus) in Floating Net Cages (KJA) in Pulau Terap Village, Kuok District, Kampar Regency, Riau Province. Based on the results of the business analysis carried out, there are sources of production risk identified in this Tilapia rearing business. The sources of production risk are seed quality and supply, mortality, feed quality, disease, weather, and human resources. Sarbaini (2022) with the research title Farmer Risk Analysis on Superior Rice Farming in Tidal Swamp Land of Barito Kuala District, South Kalimantan, Indonesia. With the results of the research analysis, the determinant of the risk of superior rice production in tidal swamp land is labor input. Labor input is risk reduction, meaning that the use of labor input is able to reduce the risk or variation in the results achieved. If farmers add workers, it means that agricultural handling will be more intensive starting from the process of seeding, fertilizing, controlling pests and diseases until the harvest period.

CONCLUSION

Analysis of production and income risk obtained coefficient of variation (KV) > 0.50 and lower limit value (L) < 0 it can be said that catfish farming business in small-scale ponds, there is an opportunity to experience losses experienced by a business.

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