

PRODUCTION AND RISKS ANALYSIS OF BROILER CHICKEN BREEDERS; CASE STUDY OF INDEPENDENT FARMERS IN LAWE BULAN DISTRICT, SOUTHEAST ACEH DISTRICT

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Abstract

The relatively high cost of commercial feed can affect the production of broiler chickens so that it can affect production risks, prices and income. The aim of this research is to analyze the production of broiler chicken breeders and analyze the production risks faced by independent broiler chicken breeders in Lawe Bulan District, Southeast Aceh Regency, because there are still some farmers who have stopped running broiler chicken farming businesses because they experience high risks. This research was conducted in Lawe Bulan District, Southeast Aceh Regency. Data collection methods usedpThere is this research, namely Observation, namely data collection carried out through direct observation of the conditions of the research location, as well as various breeder activities in carrying out the broiler chicken farming business such as preparing the cage, procuring and inserting seeds into the cage, raising chickens and harvesting and marketing. Interviews are data collection carried out through direct interviews with 30 respondents. The results of the research show that the broiler chicken farming business in Lawe Bulan District, Southeast Aceh Regency is profitable for livestock that is feasible to continue and has low risk.

Keywords: *Production, Broiler, Risk, Profit*

1. INTRODUCTION

The livestock business is one of the main businesses that provides food to support livestock industrial growth. Until now, livestock business is an engine driving national and regional development which plays an important role in the community's economy. The per capita income of the Indonesian population in this era of globalization is increasing. This is in line with the increasing need for animal protein, people are starting to realize the importance of animal protein for the growth of body tissue. Broiler chickens are one of the meat-producing livestock which is useful for meeting the needs of animal protein which is in great demand by the public (Solikhin, 2011). Broiler chickens are a type of livestock that is widely developed as a source of meeting animal protein needs. Broiler chickens are the fastest growing chicken breeds.

This matter because broiler chickens are the result of cultivation using advanced technology, so they have profitable economic characteristics. Broiler chicken is a term to refer to a strain of chicken produced by technological cultivation that has economical characteristics, with the characteristics of fast growth as a meat producer, economical feed conversion, ready to be slaughtered at a relatively young age, and producing soft fiber quality meat. Broiler chickens are a type of broiler chicken that has been bred specifically for marketing at a relatively young age, has fast growth, and a wide chest with a lot of meat deposits. The characteristics of broiler chickens are that they have soft skin and meat texture. The good condition of broiler chickens is influenced by their breeding, feeding and maintenance. Broiler chicken cultivation activities are faced with relatively high production risks because they are susceptible to disease and extreme weather changes. This can cause high mortality and cause losses. In 2020, Livestock mortality in Lawe Bulan District reached 10%. This is because broiler chickens in Lawe Bulan District are being attacked by disease outbreaks and due to extreme weather. (Southeast Aceh Livestock

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Service, 2020). Production risks are reflected in the low productivity of livestock businesses which are not in accordance with recommendations, such as cage preparation, DOC handling, feeding, disease management, as well as harvest and post-harvest handling.

2. MATERIALS AND METHODS

2.1. Time and place

This research was carried out in Lawe Bulan District, Southeast Aceh Regency. This research was conducted from January–February 2023

2.2. Types and Methods of Data Collection

The data collection methods used in this research are:

- a. Observation is data collection carried out through direct observation of the conditions of the research location, as well as various breeder activities in carrying out the broiler chicken farming business such as preparing the cage, procuring and inserting seeds into the cage, raising chickens and harvesting and marketing.
- b. Interviews are data collection carried out through direct interviews with 30 respondents.

2.3. Data analysis method

To analyze problem identification 1:

The method used in collecting business analysis data is the direct interview method with breeders using a questionnaire. The data obtained was analyzed using descriptive methods. The data obtained is used to calculate:

1. Total production costs (Total Cost/TC)

Total production costs (total costs) are all expenses during the production process as a result of the sum of fixed costs and variable costs incurred and obtained from the sum of fixed costs and variable costs (non-fixed costs). According to (Soekartawi, 1995). Mathematically it can be described as follows:

$$TC = TFC + TVC$$

Information :

FC = Total fixed costs

TVC = Total variable costs

2. Total revenue (Total Revenue/TR)

Total revenue (revenue); calculated by multiplying the total final body weight (kg) by the selling price per kilogram of broiler chickens, expressed in rupiah per head. According to (Soekartawi, 1995) with the formula:

$$TR = Q \times PQ$$

Information:

Q = Total production amount

PQ = Selling price

3. Income

Income or profit is the difference between receipts and the total production costs incurred by the farmer. Soekartawi (2001) describes income using the following formula:

$$TR - TC$$

Information:

TR = Total receipts

TC = Total production costs

4. Business feasibility

This analysis is used to determine the feasibility of broiler chicken farming in the analysis area.

R/C ratio; calculated by dividing total profits by total costs. (Suratiah, 2015)

To analyze problem identification 2:

Quantitative techniques were used to determine the magnitude of production, price and income risks experienced by broiler chicken farmers in Lawe Bulan District, Southeast Aceh Regency. The coefficient of variation value can be used to calculate the risk of broiler chicken farming (CV). The ratio of risk to income or expected money output to the amount of capital invested in the manufacturing process is known as the coefficient of variation. It can be seen in the formulas below. According to Anisa (2022:20).

The coefficient of variation formula is as follows:

$$CV = \frac{v}{Qi}$$

Information :

CV = Coefficient of Variation

V = Standard Deviation

Qi = Average Profit

The lower profit limit formula is according to:

$$L = E - 2V$$

Information :

L = Lower Profit Limit

V = Standard Deviation

E = Average Income/Production

- a. The lower limit value in production risk analysis indicates the lowest production value that will be paid to farmers. Farmers will never lose money if the lower limit of production is equal to or greater than zero. On the other hand, if the lower limit of output is less than 0, it can be concluded that there is a possibility that farmers will experience losses at each stage of the production process. If the CV value is > 0.5 then the L value is < 0 , and vice versa. That proves:
 - If $CV > 0.5$ then broiler chicken breeders will experience greater risk by bearing a loss of L in terms of production.
 - If the CV value is ≤ 0.5 then broiler chicken breeders always experience a profit or break even with a production of L.
- b. The lower limit value of price risk analysis indicates the lowest possible price that farmers can obtain. If the CV value is greater than 0.5 then the L value is smaller than 0, and vice versa if the CV value is equal to 0.5. It proves
 - If the CV value is > 0.5 , broiler chicken breeders will experience greater risk by bearing a loss of L in terms of price.
 - If the CV value is ≤ 0.5 then broiler chicken breeders will always make a profit or break even at a price of L.
- c. The lower income limit in income analysis displays as small as possible for a farmer. If the CV value is greater than 0.5 then the L value is smaller than 0, and vice versa if the CV value is equal to 0.5. That proves:
 - If the CV value is > 0.5 , broiler chicken breeders will experience greater risk by bearing a loss of L in terms of income.

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If the CV value is ≤ 0.5 then broiler chicken breeders will always make a profit or break even with an income of L.

To analyze problem identification 3:

To analyze the risk management strategies carried out by broiler chicken farmers in Lawe Bulan District, Regency Southeast Aceh, carried out using descriptive analysis. This research involves interviews with breeders by asking questions that will be answered by the breeder, and the answers given will be calculated and then processed into percent. In general, breeders have not implemented good risk management in carrying out their livestock business. Some breeders are able to anticipate risks that occur based on previous experience without being able to take into account the magnitude of the risks they face. To find out risk management strategies, descriptive analysis is used using frequency tables based on Malton's (2008) theory which is grouped into 3, namely ex-ante management strategies, interactive management strategies and ex-post management strategies. Then the answer obtained is calculated using the formula:

$$\text{Percentage} = \frac{ni}{n} \times 100\%$$

Information :

n = Total sample

ni = Number of Sample Parts

2.3 Research Procedures

1. Preparing Questionnaires For Respondents
2. Direct observation of the research location
3. Observing breeders in preparation of cages, importing seeds, raising chickens and marketing processes
4. Interview breeders directly using questionnaire questions

3. RESULTS AND DISCUSSION

3.1 Production Costs

The total production cost of broiler chickens with a total production of 58,100 birds is Rp. 2,102,530,168 with an average of Rp. 70,084,339. The largest production cost for raising broiler chickens is feed costs amounting to IDR 1,444,176,000. Feed is one of the costs that affects production results. If inappropriate feed is given to chickens, production results cannot reach the target. Feed is the main aspect of total production costs which is a determining factor in the success of a livestock business. The feed that will be given to livestock, especially broiler chickens, must meet their nutritional needs so that the resulting productivity is high. The main nutritional content that must be in the feed is energy and protein, in addition to other nutritional content.

The protein content must be balanced with sufficient energy, the protein and energy balance must be adjusted to ensure there is no deficiency, because if there is a shortage of both, it will affect livestock productivity. The factors that cause the consumption of this feed to be identical are the energy and protein content which is in a balanced condition in each treatment. This is in accordance with the opinion of Ensminger and Heinemann (1992) in Razak et al., (2017) who argue that the energy level in the feed will determine the amount of feed consumed. In the broiler chicken farming business, feed costs are one of the largest production costs, reaching 60-70% (Tamalludin, 2012). Feed is a mixture of several feed ingredients used for growth, development and reproduction which have quality and quantity appropriate to livestock needs (Suprijatna et al., 2005).

Table 1. Production costs for raising broiler chickens per harvest (30 days) / breeder

No	Description	Amount
1.	Fixed cost	
	a. equipment depreciation	87,281,000
	b. cage shrinkage	29,391,417
2.	Variable Costs	
	a. DOC	409,810,000
	B. Feed	1,444,176,000
	c. medicine/vitamins	70,974,450
	d. labor	46,550,000
	e. cage sanitation	4,050,000
	f. electricity	11,920,000
	Total production costs	2,102,530,168
	Average / breeder	70,084,339

Source: Primary data (processed)

3.2 Acceptance

Revenue is all proceeds obtained from the sale of products produced multiplied by the unit price of the product. Revenue is the result of multiplying the number of broiler chickens by the unit price of chicken sales per kg. Farmers receive income from sales of broiler chickens during one production season. Data regarding acceptance of research results in Lawe Bulan District, Southeast Aceh Regency can be seen in Table 2:

Table 2. Revenue from raising broiler chickens for one maintenance period in Lawe Bulan District, Southeast Aceh Regency.

Description	Revenue (Rp)
Broiler Chicken Sales	2,329,270,200
Total Receipts	2,399,270,200
Average	77,642,340

Source: Primary Data (Processed)

From the research results, the total production of broiler chickens was 103,695.60 kg. With an average production selling price of 23,100. So the total revenue from sales of broiler chickens is 2,329,270,200 with an average of 7,642,340/breeder. A revenue value that is greater than the total production costs means the business is profitable, while a revenue value that is less than the total production costs means the business is not profitable. In accordance with the results of this research, total production costs Rp.2,102,530,168 and total receipts Rp. 2,399,270,200. It can be seen that Revenue is greater than production costs, so the broiler chicken farming business in Lawe Bulan District, Southeast Aceh Regency is profitable.

3.3 Income

Income is the result obtained from someone's business as compensation for activities that have been carried out (Rasyaf, 2001). Income is the profit received by the farmer from the results of his business. Hoddi (2011) states that the profits obtained by broiler chicken farmers are the result of livestock sales minus the costs incurred during the production period. Based on the results of the analysis of income from raising broiler chickens during one maintenance period in Lawe Bulan District, Southeast Aceh Regency, it can be seen in Table 3.

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Table 3. Income from raising broiler chickens for one rearing period in Lawe Bulan subdistrict, Southeast Aceh district.

Description	Income
Reception	2,329,270,200
Total production costs	2,102,530,168
Income	296,740,032
R/C ratio	1,141

Source: Primary data (processed)

From Table 14, it can be seen that the income of broiler chicken breeders in Lawe Bulan District, Southeast Aceh Regency from the receipt of broiler chickens amounting to Rp. 2,329,270,200 production/breeder with production costs used in one production process, namely Rp. 2,102,530,168, so the income from the broiler chicken farming business is Rp. 296,740,032 per production process. The income of the respondents is different from each other. This income is obtained from the costs that the respondent has incurred in a production process. The broiler chicken farming business will be profitable if the ratio of total revenue to total production costs is more than one.

3.4 Business Feasibility Analysis

Another way to find out whether a business is feasible and profitable is to calculate the R/C ratio in raising broiler chickens. The R/C ratio is the number of ratios used to see the relative profits that will be obtained in a business. A business is said to be worth running if the R/C ratio value is >1. The results of the economic analysis of broiler chicken rearing in this research can be seen in the table below.

Table 4. Calculation of the R/C Ratio for Broiler Chicken Farming in Lawe Bulan District, Southeast Aceh Regency.

Description	Analysis
R/C ratio	1,141

Source: Primary data (processed)

From the results of the research, the broiler chicken farming business in Lawe Bulan District, Southeast Aceh Regency is $R/C > 1$ (1.141), which means that the broiler chicken farming business in Lawe Bulan District, Southeast Aceh Regency is profitable and worth running.

3.5.Ex-ante Risk management strategy

Ex-ante risk management strategies are efforts taken by farmers before a risk occurs.

Table 5. Ex-ante risk management strategies for production risk

No.	Description	amount Farmers (n=30)	Percentage (%)
1.	Cage preparation management		
	a. steel cage for 14H	30	100
	b. Open and close system	30	100
	c. influx of light and wind into the cage	30	100
	d. Air circulation is assisted by the tool	30	100
2.	DOC Maintenance Management		
	a. DOC health check	30	100

b. Check the number of DOCs			30	100
c. Avoid stress on DOC with sugar water	30	100		
3. Vaccines and Biosecurity				
a. ND vaccine		30		100
b. Gumboro vaccine		30		100
c. avoid the spread of disease from insects/predators	30		100	

source: *Primary Data Analysis (Processed)*

Ex-ante risk management strategies are efforts taken by farmers before a risk occurs. This stage is often used to select and determine priorities from various alternatives and possible ways to achieve the goals that have been formulated. The existence of this is shown to anticipate the initial estimates of the consequences and effects of the planned policy.

3.6. Interactive Risk Management Strategy

Interactive risk management strategy is an effort undertaken by farmers when a risk occurs. The interactive risk management strategies used in broiler chicken farming businesses in this research area are as follows:

Table 6. Interactive Risk Management Strategy

No	Description percentage	Amount	
		Farmers (n=30)	(%)
1.	Control management		
	Illness and stress		
	a. quarantining chickens is indicated	30	100
	Sick		
	b. reduces symptoms of heat stress by administering vitamins	30	100
	c. reduce stress with rain artificial	26	87

source: *Primary Data Analysis (Processed)*

in table 20. It can be seen that broiler chicken breeders in Lawe Bulan District, Southeast Aceh Regency carry out disease control management by quarantining 100% of chickens that are indicated to be sick. By quarantining sick chickens, you can reduce the risk of disease exposure to other livestock. All farmers (100%) also provide vitamins to livestock to reduce stress in chickens which can also affect the risk of chicken production. Giving vitamin supplements to poultry usually contains vitamins B complex and C. To reduce environmental stress, increase appetite and immune system. (Source animal husbandry.umm) When the weather is hot, 87% of farmers in this research area use artificial rain to reduce stress on chickens. Heat stress is one of the disorders experienced by chickens due to exceeding the normal temperature (>28°C) in the comfort zone. This results in chickens being unable to balance the production and dissipation of heat in their bodies.

3.7. Ex-Post Risk Management Strategy

Ex-post risk management strategy namely the strategy carried out by breeders after a risk occurs. If crop failure occurs even though broiler chicken breeders have implemented ex-ante and interactive risk strategies, then the only option to overcome this problem is to use an ex-post risk management strategy. The ex-post strategies used in the broiler yam farming business in this research area are as follows:

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Table 7. Expost risk management strategy

No.	Description	Amount		Percentage
		Respondents (n=30)	(%)	
1.	Breeder's attitude to the risk of loss			
	a. keep raising broiler chickens	30	100	

Source: Primary Data Analysis (Processed)

In table 21, it can be seen that broiler chicken breeders in Lawe Bulan District, Southeast Aceh Regency, all of the breeders continue to raise broiler chickens, namely 100%. This means that if the broiler chicken farming business fails, the farmer will still carry out the broiler chicken farming business. All breeders dare to take risks in their broiler chicken farming business.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1. Conclusion

The conclusions that can be drawn from the results of this research are:

1. Broiler chicken breeders in Lawe Bulan District, Southeast Aceh Regency is The total production cost of $TC = TFC + TVC$ is Rp. 2,074,761,450. The amount of revenue obtained by $TR = Q \times PQ$ is Rp. 2,399,270,000 and $TR-TC$'s income was Rp. 327,183,530. Analysis to business feasibility R/C ratio 1.14.
2. The level of production risk in the broiler chicken farming business in Lawe Bulan District, Southeast Aceh Regency is classified as low with a KV value = 0.07. The price risk level in the broiler chicken farming business in Lawe Bulan District, Southeast Aceh Regency is classified as low with a KV value = 0.03. Risk Level Income from broiler chicken farming businesses in Lawe Bulan District, Southeast Aceh Regency is classified as low with a KV value = 0.3.
3. Ex-ante risk management strategy is a strategy carried out by farmers before a problem occurs. In this research, the ex-ante strategy is carried out The livestock is considered good. The interactive strategy is a strategy used by breeders when a problem occurs. This research is also considered good. And the ex-post strategy is a strategy used by breeders who have experienced problems in research in Lawe Bulan District, Southeast Aceh Regency, who continue to breed and dare to take risks.

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