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(RESEARCH ARTICLE)

Cost and Profit Analysis of Layer Chicken Farm on Small Scale Farming in Semarang Regency (Case Study in CV. Jaya Farm Semarang)

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Abstract

This study aimed to analyze the cost structure and profitability of layer chicken in CV. Jaya Farm, Semarang Regency. Data were collected from the recording of the farming through structured interviews using questionnaire as a research instrument. The data was then analyzed using descriptive quantitative analysis to calculate the cost structure, income, and profit of layer chicken farming. The profitability analysis was analyzed by calculating the revenue, income, R/C ratio formula, gross profit, and net profit formula. The findings reveal that The analysis results show that the total production costs incurred reached Rp164,682,507 with total revenues of Rp211,690,000, resulting in a net income of Rp47,277,493. From these results, a profitability rate of 37.04 % was obtained, indicating that the laying hen farming business at CV Jaya Farm is classified as efficient, viable, and financially profitable.

Keywords: Gross Profit; Net Profit; Poultry; Profitability; Small Scale Farming

1. Introduction

The number of layer chicken farms in Indonesia is increasing over the past five years. Layer chicken Farming play a strategic and important role to fulfill the community's nutritional intake, particularly as a primary source of affordable animal protein. However the management of laying hens involves challenges frequently faced by farmers, including feed price fluctuations, disease outbreaks, and unstable egg selling prices in the market. Feed costs, which can account for 60-70% of total production costs, are a primary constraint (Hasjidla et al., 2018). Therefore, farmers are required to manage production costs wisely and seek more efficient alternatives without compromising product quality. This is essential for maintaining business stability and the resulting profits.

On the other hand, laying hens hold tremendous potential to support the economic sustainability of small-scale farmers' households. This business can serve as a relatively accessible source of additional income, particularly in rural areas. With the right approach, the laying hen business can be developed into a more professional enterprise, increasing productivity while simultaneously supporting local and national food security (Priyanti & Chasanah, 2022).

Profitability in the laying hen business is a primary indicator for assessing the extent to which a farm can generate profits sustainably. With the continuously increasing demand for eggs driven by population growth and rising public nutritional awareness, the economic opportunities in this sector are expanding. Factors influencing the profitability of laying hens include production costs such as feed prices, labor, and poultry health maintenanc as well as revenue generated from egg sales (Asriadi et al., 2022). Among all cost components, feed is the largest expenditure, constituting up to 70% of total production costs. Furthermore, fluctuations in egg market prices and the threat of avian diseases frequently act as obstacles that diminish farmers' profit margins. Consequently, profitability analysis becomes a vital step in helping farmers understand their operational efficiency ad make well-informed decisions. CV Jaya Farm was

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chosen as the research location due to the additional investment in the form of cage expansion, undertaken in response to the increasing demand for eggs from the local community. This indicates business development and investment decision-making oriented toward increasing production capacity.

2. Material and methods

This research was conducted at CV. Jaya Farm, Semarang Regency, Central Java Province, Indonesia, in January 2025. This study used a case study research method of a layer farm from starter, grower, production, and unproductive phase during a breeding period in CV Jaya Farm. The Data were collected by taking business's financial recording related to the cost components including variable and fixed costs, investment, production quantity, and selling price. The cost structured of layer chicken farm was calculated using the formula:

$$\text{Total Costs} = \text{Fixed Cost} + \text{Variable Costs}$$

The profit analysis of layer chicken farm by calculating the revenue, income, R/C ratio formula, gross profit, as well as net profit formula. The revenue and income obtained in the production phase was from selling price of eggs, while the unproductive phase was assumed to be the selling price of spent hens in the market during the research period.

$$\text{Revenue} = \text{Price} \times \text{Quantity of production}$$

Profit or income is the result of subtracting total production costs from total revenue that a business can get. A high amount of income indicates that the business is capable of getting a positive difference between total revenue and total production costs. Income can be calculated using a formula as follows (Qomariah et al., 2021):

$$\text{Income (EBT)} = \text{Revenue} - \text{Total Cost of Production}$$

R/C ratio is calculated to know the efficiency rate of layer chicken farm or knowns as ratio between revenue and production costs. The ratio can be written mathematically as follows (Nurlaelah et al., 2021):

$$\text{R/C Ratio} = {}^{\text{Revenue}}/_{\text{Total Cost}}$$

Criteria of decision:

If the R/C ratio is < 1, the business is not feasible

If the R/C ratio is = 1, the business is in break event point state

If the R/C ratio > 1, the business is feasible

Profit margin ratio is a business's ability to generate profit over a specific period of time. The profit margin in this study is divided into two, gross profit margin to calculate the ability to generate profit before tax and net profit margin to calculate the profit after tax. The profit margin can be calculated using the formula below (Sudiantini & Apiti, 2022):

$$\text{Gross Profit} = \frac{\text{EBT}}{\text{Revenue}} \times 100\%$$

$$\text{Net Profit} = \frac{\text{EAT}}{\text{Revenue}} \times 100\%$$

Information:

EBT : Earning before tax (IDR/month)

EAT : Earning after tax (IDR/month)

3. Results and discussion

Layer chicken farm represents an important sector of poultry production that contributes significantly on providing animal protein for people. Chicken eggs are widely recognized as an affordable and nutritious source of protein. In Indonesia, most layer chicken farming are operated by small to medium-scale producers and play a substantial role in supporting food security and generating income(Ilham et al., 2022). The productivity and financial performance of layer-chicken farm are highly dependent on the utilization of productions inputs. According to (Mustafa et al., 2023), technical and financial efficiency in layer-chicken production is influences by factors especially feed management, the quality of DOC, cage systems, environmental management, and workers.

Laying-chicken production is generally divided into several phases, namely the starter (0 – 6 weeks), grower phase (6 – 19 weeks), layer phase (19 – 20 weeks), and finally culling phase which occurs at 80 – 85 weeks of age. Inadequate management during the early growth phase will possibly delay sexual maturity, reduce Hen Day Production (HDP), and will decrease the overall profitability of laying-chicken farm (Rahmaniya & Haryanto, 2024).

CV Jaya Farm managed the production throughout the entire layer chicken production cycle, starting from the day-old chick (DOC phase until culling phase. The layer chicken raised at CV Jaya Farm were from Hy-Line Brown strain. The facility consisted of six battery type cages in total arranged in two rows. First row contained three cages with the highest egg productivity, accommodating 6.000 layer-chickens and producing an average of 280kg eggs each day. Two other cages contained layer chicken in the culling phase with a total population of 3.800 layer-chickens, while the last cage was unoccupied.

Table 1 Production Cost of Layer Chicken Farm at CV Jaya Farm, 2025

	Description	**Quantity**	**Unit**	**Price/unit**	**Total**	**%**
				--- (IDR/month) ---		
A.	Fixed Cost					
1.	Depreciation cost of tools & cages				1.891.269	1,15
2.	Rent of Land	2500	m^2		2.700.000	1,64
3.	Depreciation of Layer Chicken	6.000	Chicken	5.231	31.385.738	19,06
	Total Fixed Cost				35.977.007	21,85
B.	Variable Cost					
1.	Feed Cost	20.000	Kg	5.350	107.000.000	64,97
2.	Vitamin	1	Kg	780.000	780.000	0,47
4.	Rice straw	1	truck	350.000	115.500	0,07
5.	Vaccine	1	Pack	2.400.000	2.400.000	1,46
6.	Medicine cost	1	Pack	1.520.000	1.520.000	0,92
7.	Electricity	1	Month	400.000	400.000	0,24
8.	Water	-	Liter	-	-	
9.	Fuel oil	210	Liter	10.000	2.100.000	1,28
10.	Diesel fuel	60	Liter	7.000	420.000	0,26
11.	Engine oil	2	Pack	85.000	170.000	0,10
12.	Labor	5	Person		13.800.000	8,38
Total Variable Cost					128.705.500	78,15
Total Production Cost					164.682.507	100,00

The production cost in layer -chicken farm at CV Jaya Farm consisted of fixed and variable costs. Fixed costs consisting of depreciation for equipment and cages, rent of land, and depreciation of layer-chicken. Meanwhile the variable costs consist of feed cost, vitamin, rice straw, vaccine, medicine, electricity, water, fuel, and labor cost. The detailed costs and costs structured are presented in Table 1 below.

Based on table 1, the average fixed costs were IDR 35.977.009 per month or around 21,85% of the total production cost. The average of variable costs was IDR 128.705.500 or contributed 78,15% of the total production cost. The highest contributor in production cost is feed cost compared with other costs which contribute 64.97%. Feed cost in layer chicken farm took around 60 -70% of the total production cost (Bose et al., 2015; Odimegwe et al., 2015; Setiadi et al., 2020).

Table 2 Revenue of CV Jaya Farm

Type of Product	**Quantity**	**Price**	**Revenue**
		--- (IDR/unit) ---	--- (IDR/month) ---
Grade A Eggs	8.400 kg	25.000	210.000.000
Grade B Eggs (Crack Eggs)	90 kg	18.000	1.620.000
Culling Chicken (Spent Hens)	80 hens	50.000	4.000.000
Chicken Manure	7 pack	10.000	70.000
Total			215.690.000

Revenue from layer-chicken farm is obtained from the sale of eggs, crack eggs, unproductive chicken or spent hens and chicken manure. In layer-chicken farming, revenue is obtained from the sale of fresh eggs, chicken and chicken manure, each of which has a different selling value and contribution to the total revenue (Suwondo et al., 2024). The total revenue for was IDR 215.690.000 per month. The fresh eggs as the main product are divided into two types of eggs. Grade A are eggs with no crack on the shell while Grade B are eggs with slight to medium cracks on the shell. The selling price of Grade A eggs is IDR 25.000/kg and IDR 18.000/kg for grade B. The revenue in layer-chicken farm is depending to number of eggs sold, the greater the number of eggs sold and the lower the production costs, will impact on higher income earned (Safitri et al., 2025).

Table 3 Revenue, Production cost, Income, R/C Ratio of Layer-Chicken Farm

Description	**Measure**	**Amount**
Revenue	IDR/month	215.690.000
Total Production Cost	IDR/month	164.682.507
Income	IDR/month	51.277.493
Tax (0,5%)	IDR/month	1.079.800
Gross profit	%	23,74
Net profit	%	23,24
R/C Ratio	%	1,31

The revenue then be subtracted with the total production costs in order to get the total income or profit of CV Jaya Farm. The income or the gross income is IDR 51.277.493 per month. While the net income is IDR 50.197.693, derived from gross income subtracted with tax of 0,5%. The business generates net profit after all production, operational and other expenses are deducted (Pakage et al., 2018). Gross profit ratio for CV Jaya Farm is 23,74%, showed the percentage between gross income and revenue. While the net profit ratio is 23,24%, showed the percentage of income after tax and revenue. Overall, the profitability level of CV Jaya Farm is considered profitable because the business able to generate a relatively high net profit after all production costs are accounted for, thus meeting the financial feasibility criteria for a livestock business. This is in line with (Setiadi et al., 2022) research, which states that the higher the profitability value,

the better the business performance because it indicates the company's success in generating profits from all production factors used.

The large income and the size of layer-chicken farm does not instantly reflect whether a business is efficient or not. One of the methods to see the efficiency of a business is by calculating the R/C ratio. A business is considered feasible if the R/C ratio value is more than 1. According to table 3, R/C ratio value of layer-chicken farm was 1,31 greater than 1, meaning that the business is profitable or feasible to be developed. The R/C ratio value can be interpreted that for every IDR 1.000.000 cost spent would generate IDR 1.310.000 revenue. The R/C ratio values which is greater than 1, is profitable (Tamzil & Indarsih, 2020; Wantasen et al., 2022).

4. Conclusion

Based on the findings of this research, it can be concluded that the production cost structure of layer-chicken farm, study case at CV Jaya Farm, consisted of 21,85% of fixed cost and 78,15% of variable cost. The revenue and income of layer-chicken farm were IDR 215.690.000 per month and IDR 51.277.493 per month. While the R/C ratio value is 1,31. CV Jaya Farm's business is profitable or feasible to be developed.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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