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Financial Analysis Of Laying Duck On People's Farms In Pantai Labu District, Deli Serdang Regency

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Abstract. Business productivity at the farm level is still low when compared to commercial businesses both in terms of business management, quality and quantity of production.This study aims to analyze financial aspects of laying ducks on community farms. The research was conducted in Pantai Labu District, Deli Serdang Regency in November until October 2021. The samples were determined by stratified sampling, namely dividing three business scales based on the number of livestock ownership, i.e small-scale business (300-500 ducks), medium scale business (800 ducks) and the highest scale business(3.000-10.000 ducks) with the number of respondents per business scale of 3 breeders. Parameters were production cost, income. revenue, R/C, BEP, Net B/C, Gross B/C, NPV, IRR, and PP. The results of the study showed that the average income per period per business scale was Rp. 104.736.666, - Rp. 170.320.457, - and Rp. 1.606.308.080. R/C value> 1, the value of BEP production is smaller than the amount of egg production, BEP price is smaller than the selling price of eggs per egg, the value of Net B/C and Gross B/C> 1, the NPV value> 0 or positive, the IRR value with an interest rate of 16.75%, respectively, is 55%, 50% and 55% greater than the interest rate and PP, respectively 10,15,8 months.

Keywords: community farm, BEP, business scale, IRR, laying duck,

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1. Introduction

Duck farming is a side activity to increase income, however, along with technological developments, the duck business has turned to main business activities. The maintenance system is still very simple, but from the eggs and meat produced by ducks, farmers in rural areas are able to meet the needs of family life. Ducks have become one of the business choices for egg and meat providers so that it can be used as mainstay livestock.

Local duck is one of the genetic resources or germplasm of poultry in Indonesia which has advantages as an important source of animal protein, namely producing eggs and meat and specific coat color. The development of laying duck farms is capable of support national eggs and meat, which accounts for 14.64% or 2,106.9 tons of national egg needs and 1.88% or 43.2 thousand tons of national poultry meat needs [1]. Another advantage of laying ducks compared to other poultry is their high adaptability to new environments, so they can grow more easily in almost all parts of Indonesia.

Deli Serdang Regency is the regency that has the largest population of ducks in North Sumatra, which is 787.378 among several sub-districts in Deli Serdang Regency. Pantai Labu District is one of the sub-districts that has the largest population of ducks, which is 45.696 [2].

Most of the duck farming in the people's farm in Pantai Labu District, Deli Serdang Regency, is carried out by the people using an intensive maintenance system. Business productivity at the farm level is still low when compared to commercial businesses both in terms of business management and quality and quantity of production, so it is necessary to continue to strive in a planned, directed, integrated and sustainable manner in order to create a good maintenance and obtain optimal results and quality products. Based on the above background, it is necessary to carry out related research on the business analysis of laying ducks on people's farms in Pantai Labu District, Deli Serdang Regency.

2. Materials and Method

2.1. Research Methods and Sampling

The research method used was a survey method, namely interviews and direct observation with laying duck breeders in Pantai Labu District, Deli Serdang Regency.The sampling method used in this study is stratifed sampling, namely by dividing into three business scales based on the population of laying ducks in Pantai labu District, Deli Serdang Regency, namely low business scale (300-500 ducks), medium business scale (800 ducks) and high business scale (3.000-10.000 ducks). The reason for taking stratified sampling is because the respondents will be divided according to the scale of the business or the number of livestock population. Startified sampling is a sampling technique by making strata (levels / classes) within the population [3]. The data in this study processed for a period of business scale of 2 years.

2.2. Types and Sources of Data

The data used in this study are primary data and secondary data, Primary data collection was obtained from observations and interviews through questionnaires to respondents who were people who carried out laying duck farming in Pantai Labu District. Then, secondary data collection was obtained from related agencies.

2.3. Data Collection Techniques

Data collection carried out in this study was an observation that made direct observations on the business of laying ducks on people's farms in Pantai Labu District. In addition, this research questionnaires and interviews, namely data collection by dividing questionnaires or a list of questions to breeders and communicating directly with respondents to obtain data. Recording is

carried out to obtain secondary data, by recording existing data at agencies or institutions related to research.

2.4. Data Analysis Methods

2.4.1 Financial Analysis of Laying Ducks in Smallholder Farms:

a. Economic Aspects

1. Fixed Costs (Fixed Cost)

Fixed costs is a cost where total amount remains constant unaffected by changes in the volume of activities up to a certain level [4]. These fixed costs include depreciation costs for cages, depreciation of equipment and total taxes.

2.Variable Cost

Variable costs incurred repeatedly [5]. Costs included in variable costs are initial livestock costs, drug and vaccine costs, transportation costs and feed costs.

3. Production Cost

Production costs are compensation costs received by the owners of production factors or costs incurred by farmers in the production process, bothcash or non-cash method [6].The formula for production costs is as follows:

$$TC = FC + VC$$

Note :

TC: *Total Cost* (IDR)
FC: *Fixed Cost* (IDR)
VC: *Variable Cost* (IDR)

4. Income

Income is the multiplication of production produced by the selling price. The acceptance formula is as follows:

$$Pd = TR - TC$$

Information:

Pd : *Income* (IDR)

TR : *Total Revenue* (IDR)

TC : *Total cost (*IDR)

5. Total Revenue

Revenue is the difference between the company's total revenue and expenditure. To analyze revenue, two main information is needed, namely the state of expenditure and revenue within a certain period, the income formula is as follows:

$$TR = Q.\ P$$

Note :

TR : *Total Revenue* (IDR)
Q : *Total Production* (IDR)
P : *Product Price* (IDR)

b. Financial Aspects

1. Revenue Cost Ratio (R / C)

R / C is the ratio between revenue and total cost. There are three criteria inthe calculation, namely if R / C> 1 means that the farm is profitable, if R / C =1 means that the farm is breaking even and R / C <1 means that the farm is losing [7]. The calculation formula is as follows

$$\frac{\mathrm{R}}{\mathrm{C}} = \frac{\text{Total Product Sales Receipts}}{\text{Total Cost}}$$

2. Benefit Cost Ratio (BCR)

Analysis *benefit cost ratio*(BCR) is used to determine the amount of profit / loss as well as the feasibility of a project. Effort is said to be feasible if BCR> 1. The calculation formula is as follows:

$$Net\,\frac{\mathrm{B}}{\mathrm{C}} = \frac{\sum_{\mathrm{i=o}}^{\mathrm{n}} \frac{\mathrm{Bt}-\mathrm{Ct}}{(1+\mathrm{i})} \text{ for } \mathrm{Bt}-\mathrm{Ct} > 0}{\sum_{\mathrm{i=0}}^{\mathrm{n}} \frac{\mathrm{Bt}-\mathrm{Ct}}{(1+\mathrm{i})} \text{ for } \mathrm{Bt}-\mathrm{Ct} < 0}$$

Note :

Bt: *Total revenue in year* t (IDR)
Ct: *Total costs in year* t (IDR)
n: *Project life* (years)
t: *Year* 1,2,3 ....., n
i: *Discount rate* (%)

$$Gross\ B/C = \frac{\sum_{i=1}^{n} B(1+r)^{-n}}{\sum_{i=1}^{n} C_i(1+r)^{-n}}$$

Note :

I : *Interest rate*
n : *The economic life of the project*
Bt : Benefit (revenue) net year t
Ct : *Cost (cost) in year* t

3. Net Present Value (NPV)

Net Present Value used to calculate value now from the return of an investment whether it means whether the investment provides a return or even vice versa [8]. The calculation formula is as follows:

$$\mathrm{NPV} = \sum_{\mathrm{i}=0}^{\mathrm{n}} \frac{\mathrm{Bt} - \mathrm{Ct}}{(1 + \mathrm{i})}$$

Note:
Bt : *Total revenue in year* t (IDR)
Ct : *Total costs in year* t (IDR)
N : *Project life (years)*
T : *Year* 1, 2.3, ..., n
I : *Discount rate* (%)

4. Internal Rate Return (IRR)

IRR is used to calculate the interest rate (discount rate) which makes the present value of all estimated cash inflows equal to the present value of the expected cash flows. The calculation formula is as follows:

$$\mathrm{IRR} = \mathrm{i} + \frac{\mathrm{NPV}}{\mathrm{NPV} - \mathrm{NPV}} (\mathrm{i} - \mathrm{i})$$

Note:
i` : *discount rate* which results in a positive NPV
i` : *discount rate* which results in a negative NPV
NPV` : NPV *is positive*
NPV : NPV *is negative*

5. Break Even Point Analysis (BEP)

Break Even Point (BEP) is the break-even point of a situation that describes the business profits obtained with the issued capital, in other words a situation where the business condition does not experience a gain or loss [9]. The BEP value can be calculated by the formula:

$$\mathrm{BEP\ (ducks)} = \frac{\mathrm{Total\ Fixed\ Cost}}{\mathrm{Selling\ Price/item\ -\ Variabel\ Cost/item}}$$

6.Payback Period (PP)

Payback Period represents the time it takes for the initial investment to return. The payback period is also an indicator of business success. Payback period is a period required to cover investment expenditures using cash flow [10]. The calculation formula is as follows:

$$PP = \frac{I}{Ab}$$

Note:

PP: Time needed to return the capital (years)
I : Total investment capital (IDR)
Ab: Average net benefit per year period (IDR)

3. Results and Discussion

3.1. Financial Analysis of Laying Ducks in Community Farms

3.1.1 Financial Analysis

Table 1. Financial Analysis of Laying Ducks Farming

Type of Fee	Scale enterprises		
	300-500 ducks	**800 ducks**	**3.000-10.000 ducks**
Fixed Costs (IDR / Period)	3.566.666	6.889.542	16.991.918
Variable Cost (IDR / Period)	154.720.000	378.006.666	2.313.533.333
Total Production Cost (IDR / Period)	158.286.667	384.896.208	2.330.525.252
Receipt of Duck Eggs (IDR / Period)	251.940.000	528.200.000	3.686.000.000
Receipt of Rejected ducksIDR / period)	11.083.333	26.933.333	168.500.000
Receipt of Duck Feses	-	125.000	22.333.333
Receipt of Duck Feed	-	-	180.000.000
Total Revenue (IDR / Period)	263.023.333	555.216.666	3.936.833.333
Income (IDR / Period)	104.736.666	170.320.457	1.606.308.080

Production cost

Production cost of laying ducks in Pantai Labu District in “Table 1” shows that the highest average production cost is found at the highest business scale (550 - 800 head) of Rp. 2.330.525.252. Production costs tend to increase as the number of livestock increases. The difference in the amount of the total cost of production at each business scale is caused by the difference in the number of livestock raised by each farmer.

Revenue

Revenue is the multiplication of production obtained by the selling price and revenue is also determined by the size of the production and the price of the production. In “Table 1”, the income obtained by laying duck farmers in Pantai Labu per District varies in period. In “Table 1”, it shows that the highest income is on the business scale of 3.000-10.000 heads of Rp3.936.833.333.

Income

The income of farmers increases with the increase in the number of livestock being kept. The more ducks that are kept, the higher the income that will be obtained. The income earned by breeders in the business of laying ducks in Pantai Labu District is different for each business scale. “Table 1” shows that the highest income is Rp. 1.606.308.080 per period.

3.1.2 Financial Aspects

Table 2. Financial Analysis of Laying Ducks

Criteria	Scale enterprises		
	300-500	**800**	**3.000-10.000**
R/C	1,60	1,45	1,64
BEP			
Production Volume (kg)	85.750	201.719	1.165.263
Production Price (IDR)	1.252	1.383	1.284
BCR			
Net B/C	14.85	5.85	17.369
Gross B/C	1.553	1.328	1.595
NPV	172.774.529	242.196.003	2.587.993.836
IRR	55%	50%	55%
Payback Period	10 months	15 months	8 months

Revenue Cost Ratio (R /C)

Revenue cost ratio (R/C) is the ratio between the total revenue and the total production cost which is used to determine the efficiency of the laying duck business. Business feasibility is known by comparing the value of the R/C ratio with a constant value of one. The revenue cost ratio R/C based on “Table 2” shows that the business of laying ducks on the small, medium and largest scale is quite efficient because each farmer shows more than one R/C, namely on a business scale of 300-500 ducks of 1,60 on a business scale of 800 ducks of 1,45 while on the largest scale of business of 3.000-10.000 ducks of 1,64 means that the business of laying ducks is profitable. This is in accordance with the opinion. If R/C> 1 means that the farming is profitable, if R/C = 1 means that the farm is breaking even and R/C< 1 means that the farm is losing [8].

Break Even point (BEP)

Break event point is the break-even point of a situation that describes the business profits obtained with the capital issued, in other words a situation where the business condition does not experience a gain or loss.

BEP Production volume

Break Even Point (BEP) production is an illustration of the maximum production a farmer must produce so that the livestock business does not suffer losses. BEP for production is obtained by comparing the total cost of production with the selling price of eggs per egg. In “Table 2”, it shows

that the BEP of production volume in the laying duck business in Pantai Labu District on a scale of 300-500 ducks is 85.750 duck eggs, on a scale of 800 ducks of 201.719 duck eggs, while on the largest scale of 3.000-10.000 duck eggs, 1.165.263 duck eggs.The yield from the BEP was smaller than the number of eggs produced. This shows that the breeders do not experience losses from the duck farming business if they only sell eggs as many as the number of eggs produced during one period.

Benefit Cost ratio (BCR)

Net B / C Ratio

Based on "Table 2" Small, medium and large businesses have a Net B/C value of 14.85, 5.85, and 17.369. This value means that every Rp. 1.00 investment issued by the farmer can increase the profit (net benefit) of Rp. 14.85, Rp.5.85 and Rp.17.369. The Net Benefit Cost Ratio value describes the level of comparison of the benefits to the costs incurred from a project. If the Net Benefit Cost Ratio is greater than 1, the project is deemed feasible to continue because it is profitable [9].

Gross B / C Ratio

Gross B / C Ratio analysis is used to determine the profit of a business which is calculated by comparing the total benefit value or revenue and the total cost value that has been present value. Based on "Table 2", Small, medium and large businesses has a Gross B/C value of 1.553, 1.328 and 1.595. If, the gross B/C is> 1, the business is declared feasible [10].

Net Present Value (NPV)

Net Present Value (NPV) is the present value of the income streams generated by investment. NPV is the result of deduction from discounted cost. Based on "Table 2", the NPV on the lowest scale to the highest scale is Rp. 172.774.529, Rp. 242.190.003, Rp. 2.587.993.836, respectively. This shows that the NPV of the cash flow is positive or greater than zero, so the livestock business in Pantai Labu District is feasible to run. Because if the calculation with the NPV analysis produces a negative value or less than 0, this indicates that the livestock business has suffered a loss. If the NPV value is ≥ 0 then it is feasible to be cultivated, if the NPV value <0 then it is not worth cultivating.

Internal Rate Return (IRR)

Internal Rate of Return (IRR) is an interest rate which shows the net present value (NPV) equal to the total investment in the business. The internal rate of return (IRR) is the maximum interest rate a project can pay for the resources used. In "Table 2", the IRR calculation uses the bank interest rate of 16.75% and 21%. Getting results on the lowest livestock business scale is 55% while the middle and highest business scale is 50%, this shows that the laying duck business on the people's farms in Air Batu District can return loan capital up to a maximum interest rate of 55%, it can be said an IRR that is greater than the interest rate used indicates that the laying duck business in Pantai Labu District is feasible to run.

Payback Period (PP)

Based on “Table 2”, it can be seen that the payback period for laying ducks on a business scale of 300-500 ducks, 800 ducks and 3.000-10.000 ducks in Pantai Labu District is 10 months, 15 months and 8 months, respectively which means it is the investment return period when business activities are running. So it can be said that the payback period value in this livestock business is feasible to run because the payback period value is smaller than the project life.

4. Conclusion

The results of the study based on financial analysis showed that the average income per period per business scale was Rp.104.736.666,- Rp. 170.320.457,- and Rp. 1.606.308.080. Financial analysis of laying duck business on smallholder farms, obtained R/C value> 1, the value of BEP production is smaller than the amount of egg production, BEP price is smaller than the selling price of eggs per egg, the value of Net B/C and Gross B/C> 1, the NPV value> 0 or positive, the IRR value with an interest rate of 16.75%, respectively, is 55%, 50% and 55% greater than the interest rate and PP, respectively 10,15,8 months.

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