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Financial Analysis of Beef Cattle Business in People's Farms of Pulau Rakyat District Asahan Regency

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Abstract: Beef cattle are raised with the main purpose of producing meat. This study aims to determine the financial aspects of breeders on raising beef cattle and whether raising beef cattle can help the financial of breeders. The research was conducted in Pulau Rakyat subdistrict, Asahan Regency from July until August 2020. The types of data used were primary data and secondary data. Determination of the sample by stratified sampling, namely by dividing three groups based on beef cattle population, namely the low population group (1-10 cattle), the medium population group (11-20 cattle) and the high population group (21-41 cattle), then by purposive sampling, namely took 9 farmers from each population group. The data analysis method used financial analysis. Parameters were R/C, BEP, Net B/C, Gross B/C, NPV, IRR and PP The results showed that the breeders' acceptance could meet the production costs so that the income was positive or profitable. Financial analysis of beef cattle raising were obtained R/C value >1, BEP value >0, Net B/C value and Gross B/C >1, NPV value >0 or positive value, IRR value were 25.85%, 25.80% and 26% which were higer than interest rate of 16.75% respectively. The PP value was 7, 7 and 5 months respectively before the project age (5 years).

Keywords: financial analysis, beef cattle, people's farms

1. Introduction

The development of the livestock sub-sector is part of the development of the agricultural sector which has strategic value and fulfills the increasing demand for feed due to the increasing population of Indonesia. Livestock commodities have a significant role in providing nutritious food, increasing income, providing employment opportunities and reducing poverty. Some people, especially in villages, have a low bargaining position on farming, both in agriculture and animal husbandry. In rural areas, beef cattle is quite popular as a side business as well as a staple business that is sold at any time, especially in the midst of sudden economic needs. Beef cattle are raised for the main purpose namely to produce meat. Beef cattle have large bodies, maximum meat quality, fast growth rate and high feed efficiency [1].

2. Research Methods

2.1. Research Methods and Sampling

The research method used was a survey method, namely interviews and direct observation with beef cattle breeders in Pulau Rakyat District, Asahan Regency. The sampling method used in this study is *Stratifed sampling* by dividing into three groups based on the livestock population in Pulau Rakyat Subdistrict, Asahan Regency, namely the low beef cattle population group (1-10 cattle), the medium population group (11-20 cattle) and the high population group (21-41 cattle). Furthermore, purposive sampling is a method of taking samples with a specific purpose [2]. The number of samples taken in this study were 27 respondents.

2.2. Types and Sources of Data

The data used in this study are primary data and secondary data, primary data collection is obtained from observations and interviews through questionnaires to respondents who are people who run beef cattle business in Pulau Rakyat District. Then, secondary data collection was obtained from related agencies.

2.3. Data collection technique

Observations were done directly on beef cattle business in Pulau Rakyat District, included questionnaires and interviews, namely collecting data by dividing questionnaires or a list of questions to breeders and communicating directly with respondents to obtain the necessary data. Recording was done to obtain secondary data, existing data from agencies or institutions related to research.

2.4. Data analysis method

2.4.1. Economic Aspects

Fixed Cost

Fixed costs are costs incurred for production facilities and can be used many times [3]. These fixed costs include depreciation costs for cages, depreciation of equipment and total taxes.

Variable Cost

Variable costs are costs that are incurred repeatedly. These variable costs include labor costs, additional feed and medicines.

Production cost

According to [4], the cost of farming is all costs incurred and carrying out farming activities. The production cost formula is as follows:

$$TC = FC + VC$$

Information :
TC : Total Cost (IDR)
FC : Fixed Cost (IRD)
VC : Variable Cost (IRD)

Reception

Revenue is the value of the total farm product within a certain period of time, whether it is sold or not. The acceptance formula is as follows:

$$Pd = TR - TC$$

Information:
Pd : Income (IDR)
TR : Total Revenue (IDR)
TC : Total cost (IDR)

Income

Revenue is the difference between the company's total revenue and expenses. To analyze revenue, two main information is needed, namely the state of expenditure and revenue in a period of time certain [5], the income formula is as follows:

$$TR = Q. P$$

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

2.4.2. Financial Aspects

Return Cost Ratio (R/C)

R/C is the ratio between sales revenue and costs incurred during the production process to produce a product. Animal husbandry business will be profitable if the value of R/C >1. The formula used is as follows:

$$\frac{R}{C} = \frac{\text{total product sales receipt}}{\text{Total cost}}$$

Benefit Cost Ratio (BCR)

BCR will illustrate the advantages and feasible to be implemented if the value of BCR> 1. If BCR = 1, then the business is neither profit nor loss, so it is up to the appraiser to make the decision whether to implement it or not. If BCR <1 then the business is detrimental so it is better not to do it. The calculation formula is as follows:

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

Information :
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 (%)

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

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

Net Present Value (NPV)

NPV is the difference between the present value of the benefits and the present value of the costs. a business is declared feasible if NPV >0. if NPV = 0, it means that the business is neither profit nor loss, if NPV <0, then the business is detrimental so that it is not feasible to run, the calculation formula is as follows:

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

Information:
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* (%)

Internal Rate Return (IRR)

An investment plan is considered feasible if it has an IRR value greater than the prevailing bank interest rate. If the opposite happens, the investment plan is deemed unfit to be realized. The calculation formula is as follows:

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

Information:
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

Break Even Point Analysis (BEP)

BEP is a point where a company does not experience a loss of profit / loss or the point where revenue and income equal to all costs incurred. The BEP value can be calculated by the formula:

$$\text{BEP (IDR)} = \frac{\text{total fixed cost}}{(1 - \text{variable costl/ sales volume}}$$

$$\text{BEP (cattle)} = \frac{\text{total fixed cost}}{(\text{selling price per unit} - \text{variable cost per unit}}$$

Payback Period (PP)

PP is the period of return on investment issued, through the benefits obtained from a project. The shorter the time it takes to return the value of the investment incurred, the more feasible the business is to run. The calculation formula is as follows:

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

Information :
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 Beef Cattle Business in Smallholder Farms:

3.1.1. Economic Aspects

Table 1. Economic Analysis of Beef Cattle Business in Pulau Rakyat District, Asahan Regency

Criteria	Scale Enterprises		
	1-10 cattle	**11-20 cattle**	**21-41 cattle**
Revenue			
Value added of livestock (IDR / year)	4,333,333	7,166,667	4,388,889
Value of Livestock Sold (IDR / year)	14,722,222	23,611,111	71,833,333
Total Revenue (IDR / year)	**19,055,556**	**30,777,778**	**76,222,222**
Production cost			
Fixed Costs (IDR / year)	941,752	1,260,778	1,940,678
Variable Cost (IDR / year)	7,323,000	9,306,333	12,079,000
Total Production Cost (IDR / year)	**8,264,752**	**10,567,111**	**14,019,687**
Income (IDR / year)	**10,790,804**	**20,210,667**	**62,202,535**

Revenue

Based on "Table 1", the largest average income of beef cattle business in Pulau Rakyat Subdistrict is in the high population group (21-41 cow) of IDR. 76,222,222 per year while the smallest average income is in the cattle business. slaughter, namely in the low population group

(1-10 cow) of IDR. 19,055,555 per year. The difference in the amount of income in each business group is caused by the difference in the size of the population that is kept by each farmer.

Production cost

Based on "Table 1", the total production costs in the beef cattle business consist of fixed costs and variable costs. Production costs have increased along with the increase in the scale of the farmer's business. The highest total production cost incurred by the farmer is the kelompok high population amounted to IDR. 14,019,687 per year, while the smallest cost was in the low population group of IDR. 8,264,752 per year.

Income

Based on "Table 1", it is known that beef cattle business income varies at each business scale. The largest beef cattle business income is in the high population group (21-41 cattle) amounting to IDR. 62,202,535 per year, while the smallest beef cattle business income is in the low population group (1-10 cattle) of IDR. 10,790,804 per year. The difference in farmer's income is due to the difference in the scale of the beef cattle business, the larger the farmer's business scale, the greater the income. This is in accordance with the opinion [6] which states that the difference in profits obtained by farmers is due to differences in the population of beef cattle owned by breeders.

3.1.2. Financial Aspects

Table 2. Financial Analysis of Beef Cattle Business in Pulau Rakyat Subdistrict, Asahan Regency

No.	Criteria	Scale Enterprises		
		1-10 cattle	**11-20 cattle**	**21-41 cattle**
1	R/C	2,3	2.9	5,4
2	BCR			
	Gross B/C	1.9	2,3	3,3
	Net B/C	6	6	8
3	NPV (Rp)	31,728,823	59,722,140	165,063,504
4	IRR (%)	25.85	25.80	26.51
5	BEP			
	(cattle)	1	1	2
	(IDR)	8,475,767	11,347,000	17,466,183
6	PP (month)	7	7	5

Return Cost Ratio (R/C)

R/C is the ratio between sales revenue and costs incurred during the production process to produce a product. Based on "Table 2", the value *return cost ratio* (R/C) in the low

population group (1-10 cattle), the medium population group (11-20 cattle) and the high population group (>21 cattle) were respectively 2,3, 2,9 and 5,4 . The R/C value obtained is >1, this indicates that the beef cattle business on the people's farms in Pulau Rakyat District benefits and is feasible to continue. This is in accordance with the opinion [7] which states that R/C is the ratio between sales revenue and costs incurred during the production process to produce products. A cattle business will be profitable if the value of R/C >1. The greater the value of R/C the greater the level of profit that will be obtained from a business.

Benefit Cost Ratio (BCR)

Gross B/C

Based on "Table 2", Gross B/C value in the low population group (1-10 cattle), the medium population group (11-20 cattle) and the high population group (21-41cattle) were respectively 1,9, 2,3 and 3,3. The Gross B/C value obtained is >1, was shows that the business of beef cattle on people's farms in Pulau Rakyat District based on the Gross B/C analysis is profitable and feasible to run.

Net B/C

Based on "Table 2", Net B/C value in the low population group (1-10 cow), the medium population group (11-20 cattle) and the high population group (21-41cattle) are respectively 6, 6 and 8. The Net B/C value obtained is >1, this shows that the beef cattle business on smallholder farms is feasible to run. The Net B / C value is the ratio between the net benefits that have been discounted positively (+) and the net benefits that have been discounted negatively (-). If the Net B/C value is greater, the greater the profit that will be obtained by the farmer. This is in accordance with the opinion [8] which states that the Net Benefit Cost Ratio (Net B/C) is a measurement tool used to see the amount of benefits that will be obtained per unit issued for the cattle farming business. Net B/C is obtained by looking for a comparison between the net benefits that have been discounted positively and the net benefits that have been discounted negatively. Net B/C shows how many times the profit earned from the costs incurred. If Net B/C >1 then the business can be said to be feasible to be developed, whereas if Net B/C <1 then the business being run is not feasible to run.

Net Present Value (NPV)

Based on "Table 2", NPV value with an interest rate of 16.75% in the low population group (1-20 cattle), the medium population group (11-20 cattle) and the high population group (21-41 cattle) respectively namely IDR. 31,728,823, IDR. 59,722,140, and IDR. 165,063,504. It shows that the NPV value >0 or the NPV value obtained is greater than the investment cost, it can be said that the business of beef cattle on smallholder farms is good for low population

groups (1-10 cattle), medium population group (11-20 cattle) and population groups. height (21-41 cattle) is feasible to run.

Internal Rate Return (IRR)

Based on "Table 2", the IRR value obtained in the beef cattle business for the low population group, medium population group and high population group are respectively 25.85%, 25.80% and 26.51%. *discount rate*amounted to 16.75%. It shows that beef cattle business both in low population groups, medium population groups and high population groups can return loan capital up to a maximum interest rate of 25.80- 26.51%. The IRR value obtained is greater than the bank interest rate, indicating that the breeders are able to return their invested investment and the beef cattle business is feasible to run.

Break Even Point (BEP)

BEP (cattle)

Based on "Table 2", BEP value of beef cattle sales on smallholder farms is low (1-10 cattle), medium population group (11-20 cattle) and high population group (21-41 cattle) respectively namely 1, 1 head and 2 heads indicate that the beef cattle business reaches BEP when raising 1, 1 and 2 heads of beef cattle, respectively.

BEP (Rp)

Based on "Table 2", BEP value of beef cattle on people's farms for low population groups (1-10 cattle), medium population groups (11-20 cattle) and high population groups (21-41 cattle) will be achieved if the price of beef cattle amounting to IDR. 8,475,767, IDR.11,347,000 and IDR. 17,466,183. This means that beef cattle business in low population groups, medium population groups, and high population groups reach home principal when receiving revenues of IDR. 8,475,767, IDR. 11,347,000 and IDR. 17,466,183 respectively so that the business is not carried out. loss. This is in accordance with research [9] which states that break event analysis is an analysis that shows the large volume of sales and revenues that can cover operational costs.

Payback Period (PP)

Based on "Table 2", *payback period* (PP) beef cattle business in the low population group (1-10 cattle), the medium population group (11-20 cattle) and the high population group (21-41 cattle), respectively namely 7 months, 7 months and 5 months. It shows that the return on investment allocated in the construction and purchase of beef cattle pen business equipment in Pulau Rakyat District is able to return within a period of <1 year for both low population groups (1-10 cattle), medium population groups (11-20 cattle) and population groups tall (21-41 cattle). When the return on investment is assessed by the time of the cage that reaches the age of

5 years (calculated as the age of the project), the PP value based on the investment criteria shows that the business is feasible to run because it is still under the project age.

4. Conclusion

1. Income of smallholder breeders in Pulau Rakyat Subdistrict in the low population group (1-10 cattle), medium population group (11-20 cattle) and high population group (21-41 cattle) are respectively IDR 10,790,804 per year, IDR .20,210,667 per year and IDR.62,202,535 per year.
2. Analysis of beef cattle business on people's farms financially in terms of financial aspects shows that the beef cattle business is feasible to run. This is based on the fulfillment of the results of the calculation of the investment criteria for beef cattle farming in accordance with the decision making criteria in the investment criteria analysis. The value of R/C >1, BEP >0, Net B/C and Gross B/C >1, NPV more >0 or positive, the IRR is greater than the specified discount rate or interest rate and the payback period is before the age project.
3. Beef cattle business on people's farms in Pulau Rakyat Subdistrict, Asahan Regency is good for low population groups (1-10 cattle), medium population group (11-20 cattle) and high population group (21-41 cattle) based on financial analysis and can help breeders in meeting needs.

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