

FINANCIAL ANALYSIS OF CATTLE BREEDING FARM IN SLEMAN DISTRICT

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Abstract

The research was conducted to determine the feasibility of financial on beef cattle farming and calculate the Break Even Point (BEP) in Sleman District. Survey methods was done to collect primary data at the farm level and secondary data from related institution. Criteria used to analyze the feasibility of financial were consisted of Benefit Cost Ratio (BCR), Net Present Value (NPV), Internal Rate of Return (IRR) and Payback Period (PPC), based on 7 years investment and 12% annual discount factor. The result showed that based on NPV, IRR, BCR and PPC analysis, the most feasible investment of cattle breeding farm under farmers' condition was achieved when farmers keep Limousine grade cattle, followed by Simmental and Ongole grade cattle. In term of PPC, farmers who keep Limousine grade cattle were able to return the investment during 3.25 years while for Simmental and Ongole grade cattle were 3.44 and 5.19 years, respectively. The BEP of keeping Simmental, Limousine and Ongole grade cattle were 8, 9 and 7 cows/farmer, respectively, which mean that farmers will annually benefited from keeping cattle when the number of cows was larger than those of BEP.

Keywords : *Cattle breeding farm, Financial analysis, NPV, BCR, BCR*

Introduction

Role as a supplier of beef cattle is quite large. Cattle population in Indonesia during the period of four decades significantly increased an average of 6.69 million during the period 1961 to 1970, to 11 million in the year 1991 to 2006. Increase in cattle population is somehow not been able to meet the demand for beef, it is still characterized by increased imports, especially after 1991. Problems faced in the beef cattle business in Indonesia is more than 90% maintained by farmers in the traditional way, small-scale businesses, a sideline business and technology are simply so low productivity.

The case of productive heifer slaughters that reached 70% of heifer who slaughtered the also raises the impact of the beef cattle population. Lack of public awareness that resulted in the rate of population growth to be stunted. All of this is the cause of the imbalance between population growth with the needs of cattle for beef. Such conditions indicate the cattle business has a good market opportunity. To reduce foreign exchange expenditure and avoid slaughter productive cows need to be developed as a

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supplier of breeding calves. Hence the need for the development of cattle breeding as a supplier of calves and pursue Meat Sufficiency Program in 2014 that has been declared by the General Directorate of Animal Husbandry.

Ability of our farmers in producing livestock, especially for breeding is very limited due to the breeding of beef cattle breeding farm requires a substantial investment when measured by the ability of small farmers in providing capital. So also generates long term, requiring time to maintain a relatively long. Nevertheless the economic, capital or investment is not a problem if a business profitable or feasible. Therefore, researchers interested in conducting research on investment analysis for beef cattle breeding farm. The purpose of this study was to determine the financial feasibility of beef cattle breeding farm investment and determine the break even point (BEP) of beef cattle breeding farm.

Methods

Method of determining the location

Method of determining the location of the study determined a deliberate, with the location of the study sample in Sleman on the basis that in that location there are several groups of livestock farmers.

The sampling method

Sampling method with a purposive sampling are selected farmer of samples group who have been maintained a minimum of 1 year of beef cattle and had a calf. Number of samples taken in the study were 60 respondents to the decision in proportion to each group. The selection of the sample mean purposively selected and set based on certain considerations relevant to the objectives of the study (Sugiyono, 2006).

Methods of data collection.

Carried out by the method of data collection survey. The data taken are the primary data and secondary data. Primary data obtained from interviews of respondents cattle farmer using a questionnaire. Secondary data to support the primary data obtained from the Department of Agriculture and Marine Resources, Sub Department of Animal Husbandry Sleman. Primary data are drawn include: identity of the farmer, investment, operating costs, revenue, maintenance management to determine the technical coefficients.

Data Analysis

1. Technical coefficients

Technical coefficients which affect the cost and acceptance of beef cattle breeding farm is calving interval, services per conception, mortality and age of calf sales.

2. Analysis of costs and revenues

Fee required in this analysis is the cost of investment and operational costs. Receipts from the sale of the calf as the principal products and sales of feces as a byproduct.

3. Analysis of the feasibility criteria.

Data were analyzed using analysis of farm financial based on the age of investments is 7 years with a discount factor of 12% / year. Feasibility criteria for these investments based on the assumption that the cattle can produce for 7 years, the next will decline in reproductive performance. Feasibility criteria include BCR, NPV, IRR and payback period.

Benefit cost ratio (BCR). Appropriate variable in this analysis is the gross benefit that has been present value with a total cost that has been present value. The formula used is :

$$\text{BCR} = \frac{\text{Discounted gross benefit}}{\text{Discounted total cost}} \quad (\text{Gittinger, 1986})$$

It is farm if the net B / C ratio > 1, then the project "go", while the net value of B / C ratio <1, then the project "no go" (Prawirokusumo, 1990).

Net present value (NPV). Appropriate variable in this analysis is the benefit and cost that has been present value with the level of discount rate. The formula used is:

$$\text{NPV} = \sum_{t=1}^n \frac{\text{Bt} - \text{Ct}}{(1+i)^t} \quad (\text{Gittinger, 1986})$$

Description:

Bt = Benefit / gross profit earned in year t

Ct = Cost / cost incurred in year t

i = the discount rate

n = economic life of the project (years)

It is a project if $NPV > 0$, then the project is feasible. If $NPV = 0$, it means exactly for the project to restore the social opportunity cost of capital. If $NPV < 0$, so that the project is rejected it means a different and more favorable to the necessary resources projects (Kadariah et al., 1999).

Internal rate of return (IRR). Appropriate variable in the analysis are benefit and cost that has been present value. The formula used is:

$$IRR = i' + \left[\frac{NPV'}{NPV' + NPV''} X(i'' - i') \right]$$

(Prawirokusumo,

1990)

Description:

NPV' = NPV is positive

NPV'' = NPV is negative

i' = the interest rate that produces a positive

NPV

i'' = the interest rate that produces a negative

NPV

It is farm if the $IRR >$ social discount rate, then the effort is feasible and if the value of $IRR <$ social discount rate, then the project would not be feasible (Pudjosumartono, 1995).

Payback period. Appropriate variable in the analysis of the payback period is the ratio of capital / investment with an average net benefit per year. The formula used is:

$$Payback\ period = \frac{C}{E}$$

Description: C = capital / investment

E = the average net benefit per year (Prawirokusumo, 1990)

4. Analysis of break even point (BEP)

Appropriate variable in the analysis of BEP are fixed costs, variable costs, the sale of calves. The formula used is:

$$\text{Sales of BEP} = \frac{\text{Fixed cost}}{1 - \frac{\text{Variable cost}}{\text{Sales}}}$$

$$\text{BEP (unit)} = \frac{\text{Sales of BEP}}{\text{Selling price}}$$

2002)

(Sigit,

Results and Discussion

Financial feasibility analysis

Financial feasibility studies are very important because to find out if the business carried on within a certain period can be profitable for the farmer or not. To determine the feasibility of a business carried on, it used three criteria test the feasibility of NPV, IRR and BCR by using a discount rate of 12% and 7 year investment period. The amount of financial criteria presented in Table 1.

Table 1. Financial criteria for cattle breeding farm in Sleman District

Financial criteria	Value of financial criteria		
	PO	Peranakan Simmental	Peranakan Limousine
NPV	Rp	Rp	Rp 11,900,156.00
BCR	5,534,996.00	10,919,956.00	1.74
IRR	1.35	1.59	32.64%
<i>Payback period</i>	20.28%	27.70%	3.25 years
	5.19 years	3.44 years	

Table 1 shows that farmers keep PO, Peranakan Simmental dan Peranakan Limousine grade cattle were feasible to run because the NPV is positive, BCR> 1 and IRR> discount factor. Peranakan Limousine grade cattle most feasible to run than PO and Peranakan Simmental cattle since the financial criteria showed the greatest among the three types of cattle.

NPV criteria. NPV analysis is important because certain amount of money at the present time has a different value in the future. NPV is the entire net cash flow figure is multiplied by the discount factor in the year and interest rates that have been determined (Prawirokusumo, 1990). A cattle breeding farm is said to deserve to be run when the NPV is positive. This study uses a discount factor of 12% based on the prevailing bank interest rate when the study. NPV value of Peranakan Limousine cattle is greater than PO and Peranakan Simmental cattle. NPV value of Peranakan Limousine is Rp 11,900,156.00 / 7 years. This means that the profits of farmers is quite large in the amount of Rp 1,700,022.00 / 2 years. For PO and Peranakan Simmental cattle gains less the amount of Rp 790,714.00 / year and Rp. 1,559,994.00 / years.

BCR criteria. BCR is a comparison between the results that has been present value with capital costs can be accepted as an indicator of whether or not an investment that is executed. A beef cattle breeding farms is feasible if the $BCR > 1$ (Kadariah et al., 1999). Based on this research, the BCR on the three types of cattle are worth more than one. This means that cattle breeding farms is feasible because of the revenue that the farmer is greater than the costs incurred. BCR value of Peranakan Limousine cattle obtained is greater than PO and the Peranakan Simmental cattle in the amount of 1.74 so that among the three types of cattle, the breeding farm of the most feasible to run the Peranakan Limousine cattle.

IRR criteria. IRR is the net rate of return on investment as positive net benefits are reinvested in the next year and get the same interest rate over the remaining life of the project (Prawirokusumo, 1990). A beef cattle breeding farms is feasible if the IRR is greater than 12% of the interest rate (discount rate) to current research. The results showed that the three types of cattle were of the IRR is greater than 12%. This means that the farmer is able to return the invested capital. IRR value of Peranakan Limousine cattle is greater than PO and the Peranakan Simmental cattle that among the three types of cattle, Limousine Peranakan cattle breeding farm most feasible to run.

Payback period. Payback period indicates the period necessary to restore the whole capital employed in the initial investment. If the payback period is shorter than the age of the investment, the venture is profitable making it feasible to run, but if the payback period is longer than the age of the investment business is not feasible (Husnan and Suwarsono, 2005). Based on the research found that payback period value of Peranakan Limousine cattle is shorter than PO and Peranakan Simmental cattle is 3.25 years. This

means that in less than four years to recover the investment so that Limousine Peranakan cattle breeding farm is best run since the most rapid return on investment compared to PO cattle and Peranakan Simmental cattle breeding farms. According Cholig (1999), the less time the better the return for the effort.

BEP analysis

Break-even analysis is an analysis that shows the number of sales volume to cover its operating costs. This means that the sales volume of beef cattle breeding farms had no loss or gain (Wibisono, 1997). To know more clearly about the value of the BEP on beef cattle breeding farms with calf sales calculation are presented in Table 2.

Table 2. BEP value of cattle breeding farm in Sleman District

Description	Grade cattle		
	PO	Peranakan Simmental	Peranakan Limousine
Fixed cost	Rp	Rp 15.446.040,00	Rp 13.180.941,00
Variable cost	12.519.306,00	Rp 2.674.754,00	Rp 2.710.114,00
Sales (revenue)	Rp 2.780.940,00	Rp 6.743.905,00	Rp 6.528.711,00
	Rp 5.521.429,00		
BEP (rupiah)	Rp 25.223.401,00	Rp 25.599.104,00	Rp 22.535.649,00
BEP (unit/ekor)	9,14	7,59	6,90

Table 2 shows that BEP value of Peranakan Limousine cattle breeding farm lower than PO and the Peranakan Simmental cattle. The BEP of keeping Simmental, Limousine and Ongole grade cattle were 8, 9 and 7 cows per farmer, respectively, which mean that farmers will annually benefited from keeping cattle when the number of cows was larger than those of BEP.

Conclusion

Based on the financial analysis of beef cattle breeding farm on the condition of farmers in Sleman District by using the age of 7 years of investment, 12% discount factor, with the maintenance of two cows producing the best feasibility value is the Peranakan Limousine cattle with NPV value = Rp 11,900,156.00, IRR = 32.64% and BCR = 1.74, then Peranakan Simmental cattle with NPV value = Rp 10,919,956.00, IRR = 27.70% and

BCR = 1.59 next to value NPV of PO cattle = Rp 5,534,996.00, IRR = 20.28% and BCR = 1.35. In term of payback period, farmers who keep Limousine grade cattle were able to return the investment during 3.25 years while for Simmental and Ongole grade cattle were 3.44 and 5.19 years, respectively. The BEP of keeping Simmental, Limousine and Ongole grade cattle were 8, 9 and 7 cows per farmer, respectively, which mean that farmers will annually benefited from keeping cattle when the number of cows was larger than those of BEP.

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