PROFIT ANALYSIS OF TRADITIONAL BEEF CATTLE FARM IN

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PROFIT ANALYSIS OF TRADITIONAL BEEF CATTLE FARM IN MINAHASA REGENCY, INDONESIA

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ABSTRACT: A traditional beef cattle farm agribusiness needs the development in farmer's way of thinking, from production for family or market need, to production for higher profit, and this could be achieved by adapting the economic principles. The objective of this study was to find out business information for profitable business. This study was carried out on beef cattle farmers group in Kanonang III Village, Kawangkoan District, Minahasa Regency. Results showed that rising 10 beef cattles resulted in the Net Present Value at the DF of 25 % as much as IDR 18,788,330.00, Benefit Cost Ratio (B/C) at the DF of 25 % as much as 1.26, Internal Rate of Return (IRR) as much as 34.21 %, and Break Even Point (BEP) with 6 cattles. It could be concluded that the number of 10 cattles in Kanonang III Village, Kawangkoan District, Minahasa Regency, is suitable for production, with BEP achieved at the raising of 6 beef cattles. Therefore it was recommended that beef cattle farmer in Minahasa Regency should raise more than 6 cattles in order to be able to gain some profit.

Keywords: Profitability, Break Even Point (BEP), Beef Cattle.

INTRODUCTION

The success or failure of a animal farm business is generally measured as benefit-cost ratio. Thus, profit is one of the major objectives in any farm business. The development of beef cattle farm in North Sulawesi Province has a good opportunity. It could be derived from the report of Agricultural and Animal Husbandary Services of North Sulawesi (2012) that number of beef cattles in North Sulawesi increased from 98,538 individuals in 2010 to 102,698 individuals in 2011. Beef demand in North Sulawesi reached 37,000 tons in 2012, while its production gave only 31,000 tons.

This fact makes the cattle farmers need to raise their production. A commercial business, of course, requires development in their way of thinking from production for family need and local marketing to profit orientation for farmer's household (Sere et al., 1998; Mc Leod et al., 2006: Sarma and Ahmad, 2011; Bart et al., 2010). The orientation is already clear, the implementation of various economic principles to gain big profit. It means that the farmer should direct the farm activities to business-oriented, the farm-based business such as beef cattle farm business (Obese et al., 2008; Roessali et al., 2011; Salem and Khemiri, 2008; Maina et al., 2012). Kapimbi and Teweldemedhin (2012) also found that 70% of the cattle farmers in North Kunene, Namibia, reared their cattle in order to increase the family income, 27% did for consumption, and 3% did for traditional reason.

The actual condition observed in Kanonang III, Kawangkoan District, Minahasa Regency is the cattle farmers traditionally rear the cows around 3 – 12 individuals per family, and the strain is *Ongole* cow. The farmers leave their cattle grassing on the green field in daytime drive back home to be lashed at night in order for theft prevention. The cattles are not kept in the cowshed, and the food is the field grass and the green around the farmer's house. Nevertheless, there are also farmers who make a group managing the cow farming activities together. The problem is the farming group has not known the financially profitable number of cattles reared and what is the reasonable minimum number to rear. This information will be beneficial for the farmers, particularly to fit the financial support owned to run their cattle farming business.

In this regard, a cattle farmer needs to know one of the analytical tools called profit analysis. The investment plan is pursued from the "cash flow", the ratio of the total sales and the total cost. If the net benefit is positive, the investment plan could be continued, and if the net benefit is negative, the investment plan should be stopped. General profit analysis used is Break Even Point (BEP)", "Profit Rate", "Net Present Value (NPV)", "Benefit Cost Ratio (B/C)", and "Internal rate of Return (IRR)" (Gittinger, 1986).

Profit analysis in this study aimed to know the feasibility of beef cattle farming business in relation with the cattle business, to know how many cattles were the minimum number reared by a farmer for beef cattles in the study site, and to avoid the investment continuity in unprofitable cattle business. The profit analysis could be used as a guide to financial management complemented with important information needed by other parties, such as

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banks or business partnership. This study is also crucial since the cow farmers in the study site have not known yet how many cattles could be reared as a minimum number to reach the break even point (BEP) and whether the cattle business they are running is financially feasible.

MATERIAL AND METHODS

Location
This study was conducted in Kanonang III, Kawangkoan District, Minahasa Regency, North Sulawesi Province. Site determination was selected by "*purposive sampling*" under consideration that Kanonang III is the rearing center of ongole crossbreeding cattles in Kawangkoan District, Minahsa Regency, with 923 cattles in 2013 (Statistics Center Office of North Sulawesi, 2013). Also, Kanonang III is a village guided by Faculty of Animal Husbandary, Sam Ratulangi University, Manado.

Respondents
Respondents were all cattle farmers joining the farmer group "Pelita" who reared more than 4 beef cattles amounting 20 people. The respondents selected were the ongole crossbreeding beef cattle farmers who had had at least 5-year rearing experience and had sold ther cattles.

Data Collection
Data collected were primary and secondary data. The former was obtained using questioneers by interviewing the beef cattle farmers that covered cattle ownership, initial weight of the cattle, number of feed consumed, medicines, marketing, and other costs (tax, permit, and etc.). the latter was gained from Agricultural and Animal Husbandary Services of both North Sulawesi Province and Minahasa Regency, to strengthen the research. Based on the primary data, with mean weight, rearing 10 individuals of beef cattles of 170 kg initial weight was projected. This projection was reviewed by considering various technical factors.

Data Analysis
Data were descriptively analyzed to address the characteristics of the cattle farmer respondents un the study site using graphic and percentage. The profit of the beef cattle business was analyzed as follows:

Income Statement (Cost-Benefit)
Basically, cost-benefit calculation reflects the cash inflow and outflow. Therefore, this comonent covers gains and expenditures/costs. For instance, the cost-benefit calculation of the cattle farm (as an illustration) is as follows (Myer, 1979 and Bowlin et al., 1980):
  I Cash Revenue of Cattle Business, covering the cattle and the dirt sales
  II Cash Expenditure ("*Variable Cost*"), covering the purchase of cow, the cattle feed, the medicines, the transportation cost, and the labor wages.
  III Revenue (gross profit = I – II)
  IV Fixed Cost, covering the ownership tax, the cage and equipment depreciation, the loan interest, the insurance, and the salary of the company leader.
  V Net Income (III – IV).
  Note: The depreciation of cage and equipment was calculated using a straight line method (Emery et al., 1962):

$$\text{Depreciation} = \frac{\text{Initial investment value} - \text{residual value}}{\text{Economic age}}$$

"Break Even Point" (BEP) is a condition indicating the business is neither lost nor profitable (Johannes et al., 1980):

$$\text{BEP} = \frac{\text{Fixed Cost}}{1 - \dfrac{\text{Total Variable Cost}}{\text{Total Sales}}}$$

Investment criterion

The test based on *"Investment Criterion"* is intended to know how big is the benefit and cost during the project economic period (*"in the future"*). The value at present (t_0) was measured in Present Value. This used Discounting Factor (Gittinger, 1986) as follows:

Net Present Value (NPV)

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

- NPV Positive $\rightarrow$ the cattle business is continued
- NPV Negative $\rightarrow$ the cattle business is terminated
- NPV = 0 $\rightarrow$ no profit or loss (BEP)

Benefit Cost Ratio (B/C)

$$B/C = \frac{\sum_{t=1}^{n} \frac{Bt}{(1+I)^t}}{\sum_{t=1}^{n} \frac{Ct}{(1+i)^t}}$$

Where:
Bt   =   Benefit in year t
Ct   =   Cost in year t
I   =   Interest rate
t   =   Cattle business age in year t

Decision:
B/C > 1 $\rightarrow$ Cattle business is feasible
B/C < 1 $\rightarrow$ Cattle business is not feasible
B/C = 0 $\rightarrow$ *Break event point*

Internal Rate of Return (IRR)

IRR is an interest rate indicating that Net Present Value equals to number of all cattle project investment costs. In other words, IRR is an interest rate in which entire net cash flow at present equals to Investment Cost. In IRR analysis, the Discount Rate would be determined and the NPV would be set to 0. To determine the ideal discount rate, an interpolation was done between the lower interest (giving negative NPV) following the formula below (Gittinger, 1986):

$$IRR = DfP + \frac{PVP}{PVP - PVN} \times (DfN - DfP)$$

where:

DfP = *"Discounting Factor"* used, giving positive Present Value.
Dfn = *"Discounting Factor"* used, giving negative present value.
PVP = *"Present Value"* positive
PVN = *"Present Value"* negative

RESULTS AND DISCUSSION

Respondent's characteristics

Results showed that average area occupied by the cattle farmer's household in the study site was 0.92 ha, but the area worked was only 0.74 ha, because the rest was employed to graze the cattles, and thus, the farmer

left the field to grow grasses, and the cattle could take advantages of the grass and the agricultural wastes in the farming area.

Table 1 - Respondent's Characteristics

Variable	Category	Percent	Average
Land Size (hectare)	-	-	0.92
Age	Productive age	93	2.73
	Unproductive age	7	0.69
Educational Level	No Education	0	-
	Elementary	18	-
	Secondary	35	-
	High School	38	-
	University	9	-
Number of Households (person)	-	-	3.86
Experience Level	< 5 years	24	-
	5 – 10 Years	42	-
	> 10 Years	34	-

The cattle farmers belonging to the productive age were 93 farmers (93%) and the rest 7 farmers (7%) belonged to the unproductive age. This condition indicates that most farmers belong to the productive agers, and therefore, they are assume to be capable of managing their cattle business and relatively fast adopting the technology. In education, all cattle farmers have had formal education, even though some of them do not finish the elementary school. They are 38% with high school, 18% with elementary school, 35% with secondary school, and 9% with university education. Beside formal education, the cattle farmers in the study site has also non-formal education, such as counseling from the agricultural and animal husbandary extension workers of Kawangkoan district, so that their long cattle farming experience and sufficient cattle business knowledge, the farmers will ease them to catch the new technology and implement it. Number of family members ranged between 2 to 7 people with an average of 3.86 people. This potential of number of family members is utilized for family business activities, such as food plant farm (rice, corn, peanut etc.), cattle farm business, *off farm* (agricultural labor, cow sales, crop sales), and working outside the agricultural sector, such as construction labor, running a shop and others. Cattle farming experience reflects that more than 50% of the farmers in the study site possess more than 10 year-experience. Five percents of the farmers have less than 10 year-experience, 45% of them have farming experience of 10 – 10 years, and 50% of the farmers have more than 20 year-experience, so it is apparent that most of them have had good farming experience. The work-cattle long reared is one of the household's income source and savings. The cattle farming business has been carried out since Minahasa Regency was established, about 400 years ago, and done hereditarily up to now combined with other farming activities, such as food plant farming.

Break Event Point (BEP)
BEP is a condition indicating whether the business is neither profitable nor lost. Based on the analysis, the BEP of beef cattle business in Kanonang III was reached at 6 individuals with a value of IDR 32,125,480.14, meaning that the beef cattle business would get profit if the farmer reared more than 6 cattles.

Net Present Value (NPV)
This study showed that rearing 10 beef cattles in Petang village obtained NPV DF 25 % as much as IDR 18,788,330.00, meaning that the beef cattle business was profitable and could be continued.

Benefit Cost Ratio (B/C)
The analysis found B/C, at the discount rate of 30 %, was 1,26. It reflects that at the discount rate of 25 % (high enough), the B/C ratio was still bigger than 1. This condition indicates that the beef cattle business with 10 individuals in Kanonang III is highly beneficial and feasible to run.

Internal Rate of Return (IRR)
Based on the data directly collected from the beef cattle farmers in Kanonang III, it was found the IRR of 34.21 %, reflecting that "Returns to Capital Invested" in 5 farming cycles of 10 beef cattles is highly feasible since the bank interest rate is lower than 34.21 %

CONCLUSION

This study concluded that rearing 10 beef cattles in Kanonang III, Kawangkoan District, Minahasa Regency was highly profitable so that it was feasible to do. The Break Event Point (BEP) was achieved at the maintenance of 6 cattles.

Recommendation
Based on the financial analysis, the beef cattle farmer should raise more than 6 cattles in order to be able to gain some profit.

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