Beef Cattle Feasibility Study of

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Beef Cattle Feasibility Study of House Hold Farm in Bolmong Regency, North Sulawesi Province of Indonesia

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Abstract

A beef cattle agribusiness household farm needs farmer's way of market production development referring to higher profit. This way could be achieved by adapting the economic principles. The objective of this study was to find out the local beef cattle farm profitable business information. This study was carried out on beef cattle farmers group in Lalow Village, Lolak District of Bolmong Regency. Results showed that raising 10 beef cattles produced the Net Present Value at the DF of 25%, equal to IDR 18,788,330.00, Benefit Cost Ratio (B/C) at the Discount Factor (DC) of 25%, equal to 1.26, Internal Rate of Return (IRR) of 34.21%, with the Break Even Point (BEP) of 6 cattles. It could be concluded that the number of 10 cattles in Lalow Village, Lolak District of Bolmong Regency was feasible for this animal production, with BEP achievement of raising at least 6 beef cattles.

1. Introduction

The success or failure of an animal farm business is generally measured as benefit-cost ratio. Thus, profit is one of the major objectives in anyfarm business. The development of beef cattle farm in North Sulawesi Province has a good opportunity. It could be derived from the report of Animal Husbandary Service Center of North Sulawesi in 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 31,000tons.

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 (Sereetal.1998; MacLeodetal.2006; Sarma,2011; Bartetal.2009). The orientation is already clear, the implementation of various economic principles to gain big profit. It means that the farmers hould direct the farm activities to business-oriented, the farm-based business, such as beef cattle farm business (Emeryetal., 1962; Obeseetal.2008; Roessalietal.2011; Salemand Khemiri, 2008; Mainaetal. 2012). It was 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 (Kapimbi and Teweldemedhin, 2012).

The actual condition observed in Lalow village, Lolak District, Bolmong 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 day time drive back home to be lashed at night in order for the prevention. The cattles are not kept in the cow shed, and the food is the field grass and the green around the farmer'shouse. Nevertheless, the reare also farmers who make a group managing the cow farming activities to gether. 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, particularlyt of it the financial support owned to run their cattle farming business.

In this regard, acattle farmer needs to know one of the analytical tools called profit analysis. The investment plan is pursued from the "cashflow", 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 aguide to financial management complemented with important information needed by other parties, such as banks or business partnership. This study is also crucials in 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.
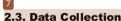
2. Materials and Method

2.1. Location

This study was conducted in Lalow village, Lolak District, Bolmong Regency, North Sulawesi Province. Site determination was selected by "*purposive sampling*" under consideration that Lalow is the rearing center of ongole cross breeding cattles in Lolak District, Bolmong Regency, with 923 cattles in2013 (Statistic Center Office of North Sulawesi, 2013). Also, Lalow is avillage guided by Faculty of Animal Husbandary, Sam Ratulangi University, Manado.

2.2. Respondents

Respondents were all cattle farmers joining the farmer group called "Lembu Lestari" who reared more than 4 beef cattles amounting 20 people. The respondents selected were the ongole crossb reeding beef cattle farmers who had at least 5-year rearing experience and had sold their cattles.

2.3. 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, ando ther 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.

2.4. Data Analysis

Data were descriptively analyzed to address the characteristics of the cattle farmer respondents and 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 out flow. Therefore, this comonent covers gains and expenditures/costs. Forinstance, thecost-benefit calculation of the cattle farm (as an illustration) is as follows (Myer,1979; Bowlinetal.,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 laborwages.
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 (Emeryetal., 1962):

$$Depreciation = \frac{Initialinvestmentvalue - residualvalue}{Economicage}$$

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

$$BEP = \frac{FixedCost}{1 - \frac{TotalVariableCost}{TotalSales}}$$

2.5. Discounted Criteria

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

2.5.1. Net Present Value (NPV)

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

Results:
- NPV Positive→the cattle business is continued
- NPV negative→the cattle business is terminated
- NPV =0→noprofitorloss(BEP)

2.5.2. 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 yeart
Ct = Cost in yeart
i = Interestrate
t= Cattle business age in yeart
Decision:
B/C>1→Cattle business is feasible
B/C<1→Cattle business is not feasible
B/C=0→Break event point

2.5.3. Internal Rateof 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 flowat 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*" is positive
PVN= "*Present Value*" is negative

3. Result and Discussion

3.1. Respondent Characteristics

Results showed that average are aoccupied by the cattle farmer's house hold 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 Characteristics

Variable	Category	Percent	Average
LandSize(hectare)	-	-	0.92
Age	Productiveage	93	2.73
	Unproductiveage	7	0.69
EducationalLevel	NoEducation	0	-
	Elementary	18	-
	Secondary	35	-
	HighSchool	38	-
	University	9	-
NumberofHouseholds(person)	-	-	3.86
ExperienceLevel	<5years	24	-
	5–10Years	42	-
	>10Years	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 belongto the productive agers, and therefore, they are assume to be capable of managing their cattle business and relatively fast adopting the technology. Ineducation, all cattle farmers have had formal education, eventhough 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 husbandry extension workers of Lolak district, so that their long cattle farming experience and sufficient cattle business knowledge, the farmers will be 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, peanutand etc.), cattle farm business, *off farm* (agricultural labor, cowsales, crop sales), and working out side 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 10year-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 Bolmong Regency was established, about 400 years ago, and done here ditarily up to now combined with other farming activities, such as food plant farming.

3.2. 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 Lalow village was reached at 6 individuals with a value of IDR 32,125,480.14, meaning that the beef cattle business would get profitif the farmer reared more than 6 cattles.

3.3. Net Present Value (NPV)

This study showed that rearing 10 beef cattles in Lalow village obtained NPVDF 25% as much as IDR18,788,330.00, meaning that the beef cttle business was feasible and could be continued.

3.4. 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 Lalow village is highly beneficial and feasible to run.

3.5. Internal Rate of Return (IRR)

Based on the data directly collected from the beef cattle farmers in Lalow village, 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 interestrate is lower than 34.21 %.

4. Conclusion

This study concluded that rearing 10 beef cattles in Lalow village, Lolak District, Bolmong Regency was highly profit able so that it was feasible to do. The Break Event Point (BEP) was achieved at the maintenance of 6 cattles. Therefore, based on the financial analysis, it was indicating that the beef cattle farmer should raise more than 6cattles in order to be able to gain some profit.

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