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Cow Breeding Business Opportunities with Traditional System

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Abstract

The labor force's unemployment rate, which is still high, has encouraged the growth of various business units as providers of employment for the productive age. This study aims to determine the business opportunities of cattle farming with traditional systems in the Gorontalo area. The method used is a combination of qualitative and quantitative. The qualitative process is carried out by interviewing farmers; the results of the interviews are then displayed in the form of quantitative figures. The analysis is done by calculating cash flow, net present value (NPV), internal rate of return (IRR), benefit-cost ratio (BC Ratio), and gross margin. The results showed that the traditional system of cattle farming business by self-management and profit sharing, cash flow, NPV, IRR, BC ratio, and gross margin was profitable so that they were worthy of being selected. Cash flow and NPV are still positive, and the IRR level is greater than the required profit level.



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1. Introduction

The development of the number of available jobs smaller than the number of the labor force results in an increase in the number of unemployed in the productive age. This is a problem faced by the government both at the national level and in the Tomini Bay area, which has not yet found a solution until now. The Tomini Bay area is an area of land and sea that can be a resource to drive the economy of its people. Aids in the livestock sector are potentials that can be developed as a driver of economic growth. In the 1980s to 1990s, Gorontalo was one of the areas that supplied cattle to Kalimantan, but now that is no longer the case. This situation illustrates that livestock production exceeded the current needs in the past, so the price of this commodity was still low compared to the Kalimantan area. The development of the region has resulted in increased demand for beef in this area. The development of livestock business which is not proportional to the increasing demand for cattle in this area, is the cause of this area no longer supplying cattle to the Kalimantan area. The development of livestock in this area must be a concern because the amount of production is still slow compared to consumption. Developing cattle can be done by cultivating and motivating people to build this business. Cattle farming in this area is still widely developed traditionally; cattle breeders develop cows as a sideline and work in the agricultural sector. Most of the breeders in this area are farmers who develop livestock independently in limited numbers. Some still rely on traditional systems running for generations, and some have managed it semi-

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modern by applying simple technology to breed livestock, process animal feed, and sell their livestock. There is also a profit-sharing system in the traditional maintenance tradition that can benefit both parties because the animal owners (capital owners) do not have sufficient time to maintain and supervise themselves. So it is given to parties that are considered capable and allow them to keep and run cattle. Directly and periodically. This condition allows the creation of cooperation between animal owners and breeders. The desire of cattle breeders to run their business but is constrained by business capital will be helped through the cow's owner as of the owner of the money. So that the system built is through a profit-sharing scheme. This effort is considered capable of contributing to income and improving the standard of living of cattle farmers. The profit-sharing system is a system in which an agreement or joint business bond is carried out in carrying out business activities. In this business, a contract is made for the distribution of the profits to be obtained between two or more parties. The amount of the profit-sharing portion between the two parties is determined according to a mutual agreement. It must occur with each party's willingness without any element of coercion (Yunianto, 2015). Farmers with small business scales need the support of facilities and the role of stakeholders to maintain the supply chain of cattle and beef, Zenal Asikin et al. (, 2020). Lestari et al. (2017) suggest that developing a cattle farm needs to pay attention to feed availability as an essential capital in business success. Another factor that is no less important is the ability to increase efficiency in developing a business. Comparative advantage should be utilized and always continue to make improvements to increase competitive advantage. Breeders like this use a lot of feed available around their environment, such as straw, banana stems, grass as the primary feed source for their livestock. By utilizing feed available in the environment, this model breeder can reduce the cost of meals incurred compared to farmers who rely on feed that must be purchased. There are still many breeders who naturally breed their livestock, not many use technology in animal husbandry. This is also an obstacle to optimal livestock breeding. Therefore, this study aims to analyze the costs and benefits of traditional cattle farming and the investment performance in the cattle farming industry.

2. Research Method

This study uses a combination of qualitative and quantitative research methods. Aspects of research studies using qualitative and quantitative approaches are generally carried out during identification and exploration. Qualitative was conducted to obtain information from farmers about the methods used to develop a cattle business to receive best practices through analysis benchmarking between one breeder and another. Quantitative is used to obtain information about the costs and benefits of developing a cattle farming business through an analysis of investment performance. This research will be conducted in Gorontalo City and Gorontalo Regency. This study's sources of data consisted of: Primary data sources: data obtained from interviews with cattle breeders about the methods used in conducting their business and other related parties. Secondary data sources: research reports, scientific literature, and data obtained from the central statistical agency related to the development of cattle farming in this area. Data collection techniques that will be used with each other consist of Observation, which is used to obtain data and information about cattle development, which is usually done by farmers so far. Direct interviews with farmers to accept the methods used, feed requirements, how to receive and process animal feed, information on costs that must be incurred by farmers both from feed and other supporting facilities, and the selling value of cattle. Data analysis using cost-benefit analysis was obtained from interviews with farmers to get information about the amount of income and costs incurred until the cattle were sold. Quantitative research is carried out to get an overview of how to assess the performance of an investment using the formula:

1. Net Present Value:

$$NPV = \left(\frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \frac{CF_3}{(1+r)^3} + \frac{CF_n}{(1+r)^n} \right) - NI$$

This formula takes into account the level of cost of capital and cash flow from investments, which shows that an investment can be made if it has an NPV value > 0 .

2. Internal Rate of Return

$$NI = \left(\frac{CF1}{(1 + IRR)^1} + \frac{CF2}{(1 + IRR)^2} + \frac{CF3}{(1 + IRR)^3} + \frac{CFn}{(1 + IRR)^n} \right)$$

This formula is used to equalize the present value of cash inflows and the present value of cash outflows that an investment can be made if the value of $IRR >$ required rate of profit.

3. R/C Ratio (*Return Cost Ratio*)

Is the comparison between sales receipts and the costs incurred during the production process to produce the product. The livestock business will be profitable if the r/c value is > 1 . The greater the r/c value, the greater the profit level that will be obtained from the industry. The formula used in calculating the r/c ratio is:

$$\frac{R}{C} \text{ ratio} = \frac{\text{Total Income (Rp)}}{\text{Total Production Cost (Rp)}}$$

Soekartawi et al., (1996), stated that a business is said to provide benefits if the value of the r/c ratio > 1 . The greater the value of the r/c ratio, the more efficient the business is and vice versa, the smaller the value of the r/c ratio, the less efficient business.

4. Gross margin

This formula is to obtain information on the results of the reduction between Total Revenue and Total Cost Variable

$$GM = TR - TVC$$

3. Result and Discussion

3.1. Cultivation of cattle with Traditional system

Traditionally, cattle farming that the community has developed is still being carried out by utilizing the available animal feed around their environment. This cultivation is carried out in limited quantities according to the ability of farmers to maintain and handle livestock. The most widely practiced cultivation is the cultivation of the Bali Cattle because it is easier to breed. With a sample of the type of Bali Cattle with details of three mothers and two calves aged one year. This farm is an independent community farm where they use grass and other feed during the day. As for the feed at night, they use purchased feed such as corn and bran. Assuming that the farmer sells bulls that are two years old, part of their income is to cover the feed used. While maintaining the number of cows every year as many as five heads, one farmer can still handle this number directly. Livestock with a cultivation system like this can be better if you have a garden planted with forage grass such as elephant grass, odot, pakchong. This kind of feed can reduce the cost of feed so that the cash flow can be greater than the cash flow shown in the table. The cash flow for cattle farming like this is as follows in Table 1:

Table 1. Cultivation Cash Flow Managed by The Owner (In Rupiah)

Information	CF 1	CF 2	CF 3	CF 4	CF 5	CF 6
Sales revenue	22.000.000	24.000.000	24.000.000	26.000.000	28.000.000	3.000.000
Maintenance cost						
Corn leaves	7.200.000	7.400.000	7.400.000	7.500.000	7.500.000	7.600.000
Bran	1.800.000	2.000.000	2.000.000	2.000.000	2.000.000	2.100.000
Vitamin	1.200.000	1.200.000	1.200.000	1.200.000	1.200.000	1.200.000
Wages	300.000	400.000	400.000	400.000	400.000	500.000
The amount of costs	10.500.000	11.000.000	11.000.000	11.100.000	11.100.000	11.400.000
Cash flow	11.500.000	13.000.000	13.000.000	14.900.000	16.900.000	18.600.000

Table 2. Net Present Value of Cultivation Managed by The Owner (In Rupiah)

Year	Cash Flow	1 + Required interest rate (20%)	Present Value
1	11.500.000	1,2	9,583,000
2	13.000.000	1,44	9,027,000
3	13.000.000	1,728	7,523,000.
4	14.900.000	2,07	7,198,000
5	16.900.000	2,49	6,787,000
6	18.600.000	2,98	6,241,000
Present Value			46,359.000
Investment Value			34.000.000
Net Present Value			12,359.000

The net present value of this project is buoyant, so it can still be considered by farmers to be selected. Positive results indicate that the total current value based on the expected profit level of 20% can still be achieved or even more. This is proven by the results obtained that the present value is still more significant than the total value of the investment issued. The total investment given is Rp. 34,000,000.

Table 3. Internal Rate of Return of cultivation managed by the owner

Interest Difference	Difference Present Value (PV)	Difference between PV and Initial investment
32%	34,525,458	34,525,458
34%	33,018,683	34.000.000
2%	1,506,775	525.458
IRR	$32\% + (525.458 / 1,506,775) \times 2\%$	
IRR	$32\% + 0,69\% = 32,69\%$	

IRR shows the present value at the interest rate, which shows that the present value is the same as the investment value. The IRR of this project is 32.69% which means it is greater than the expected profit so that this project can still be a good choice for farmers.

Table 4. Return Cost Ratio

Years	Return	Cost	Ratio = R/C
1	11.500.000	10.500.000	1,09
2	13.000.000	11.000.000	1,18
3	13.000.000	11.000.000	1,18
4	14.900.000	11.100.000	1,34
5	16.900.000	11.100.000	1,52
6	18.600.000	11.400.000	1,63

Return cost ratio is a comparison between the amount of profit earned with the amount of costs incurred. The comparison between return and cost shows an increase in the number of better ratios because farmers can take advantage of the feed available in their environment such as grass, corn husks, banana stalks. By utilizing the feed, the cost of feed incurred by farmers is reduced. Livestock cultivation system with profit sharing in which the cattle owners do not bear the cost of feed. They are only providing cows to be raised by other people who cannot yet buy cows. For this analysis, five female Bali Cattle are used, which are ready to produce. The value of the investment is IDR 40,000,000 @ IDR 8,000,000. This system can help those who cannot buy cattle for breeding will get a share of livestock. Meanwhile, livestock owners are not bothered by the cost of feed because it is filled by people who take care of their livestock.

Table 5. Cash Flow Cultivation of Profit-Sharing System (In Rupiah)

Info	CF 1	CF 2	CF 3	CF 4	CF 5
Breeding income	17.500.000		17.500.000		24.500.000
Fattening income		11.250.000		12.500.000	
Cash flow	17.500.000	11.250.000	17.500.000	12.500.000	24.500.000

Revenue Breeding represents revenue earned by breeding cows that are in the value of one year old. The advantage of breeding where calves up to one year do not require a lot of feed, but the economic value already has a value of 3.5 million, so assuming five cows produce one calf after one year, it becomes (3.5 million x 5 tail) Rp. 17.500.000,-. Female cows that reach the age of 2.5 to 3 years are already able to produce. So that in the 5th year, breeding can be obtained from the new mother cow. Fattening income is an increase in cattle price between 1 year to 2 years (4.5 million x 5 heads) to 22,500,000,-. The rise in cattle price from the age of one year is divided by the person who takes care of the cattle. Calves in the first year in the second year experience growth into adult cows up to the age of 2 to 3 years develop into cows that are ready to be fertilized for female cows and sold to bulls.

Table 6. Net Present Value of profit-sharing system cultivation (In Rupiah)

Year	Cash Flow	1 + Required interest rate	Present Value
1	17.500.000	1,20	14,583,300
2	11.250.000	1,44	7,812,500
3	17.500.000	1,728	10,127,300
4	12.500.000	2,07	6,038,600
5	24.500.000	2,49	9,839,300
Present Value			48,401,000
Nilai Investasi			40.000.000
Net Present Value			8,401.000

This investment expects an expected rate of return of 20%. Net Present Value shows a positive value so that this project can be considered for selection by farmers.

Table 7. Internal Rate of Return of profit-sharing system cultivation

Interest Difference	Difference Present Value (PV)	Difference PV with Initial investment
30%	40,769,477	40,769,477
32%	37,964,371	40,000,000
2%	2,805,106	769,477
IRR	$30\% + (769,477 / 2,805,106) \times 2\%$	
IRR	$30\% + 0,54\% = 30,54\%$	

The IRR for this project is 30.54%, which means it is greater than the expected profit so that this project can be considered for choice by farmers. With a project age of five years, the IRR rate is 30.54%. Return cost ratio and Gross margin in the profit-sharing system for livestock owners because livestock owners do not bear the cost of raising livestock. The cost of raising livestock is entirely paid by the person who submits the cattle.

3.2. Discussion

Whereas the cash flow from the two traditional systems, which the owner and the profit-sharing system manage, each provides an attractive cash flow value from year to year. Even though it has an increased cash flow, this self-managed system has limitations because for a farm like this, the maximum that farmers can manage is only five cows, so it has problems if the farm is in large numbers. The net present value for these two traditional systems has a positive NPV value. These two models can still be a good choice because the present value obtained at an interest rate of 20% provides results that are still greater than the investment value spent. The internal rate of return in these two models shows that the internal rate of return produces a more excellent value than the expected interest rate. So that investing in both is still a good choice in addition to NPV and IRR. The benefit-cost ratio and gross margin also show a desirable value as an alternative investment that farmers can make. Although both systems are profitable, the number of cattle that can be developed with this model is relatively limited due to the ability of farmers to manage livestock. Therefore, if this model is formed into a cattle husbandry investment model, it should also create a semi-modern livestock management system to develop livestock that cannot be acquired with the two models. By applying a combination of models, it is hoped that cattle breeding will be optimal in the Gorontalo area. The availability of land for growing animal feed can increase the cost efficiency of farmers to meet forage sources of feed.

4. Conclusions

From the results of this study, it can be seen that the cattle that both traditional and semi-modern breeders mainly develop are Balinese. This cow is the choice of most breeders. It is not too difficult to create because it does not choose feed, and most consumers can reach the market price, so it is also accessible to the market. Most of the existing breeders carry out livestock breeding either naturally or through artificial insemination. Applying this technology can speed up the breeding process; if the cows are still very productive, then every year, the breeder gets calves from each mother cow. A cattle farm with cattle breeding models (breeding) is more profitable than cattle for sale. Breeding will provide better cash flow, the NPV value is positive, and the IRR is greater than the required profit level. In traditional cultivation, which the livestock owners manage, they have a better investment performance because they can utilize the feed available in their environment to reduce the cost of feed incurred. Traditional cultivation also has a profit-sharing system that has good investment performance assessed based on cash flow, NPV, IRR, so it is fascinating to apply. With this system, people who can provide livestock can help poor people who desire to raise livestock but cannot buy cattle, so they can use this method to get the opportunity to own livestock. In cattle cultivation, livestock breeding is a way that farmers must obtain a higher rate of return as expected. This happens because the new calves provide income that comes from breeding. Meanwhile, the cost of feed for cattle aged up to one year is relatively small compared to farmers' value. Breeders should have land to plant fodder such as odot, pakcong, and elephant grass, which is easy to grow as the primary source of feed for their livestock, and can use hay added with concentrate

to increase the growth of cattle for both breeding and fattening. The existence of land for feed sources can increase efficiency by saving feed costs. All farmers do not have their financial records from year to year, so this research is based on interviews with farmers in the base year. The following year is a projection of the average increase that occurs from year to year obtained from observations and interviews. This study does not consider the inflation rate and the risk of the dry season, which has an impact on the price of animal feed sourced from forage.

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