

Financial Analysis of Rabbit Breeding in Various Scale

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ABSTRACT

One of the business structure of the industry building is rabbits breeding, which is generally considered to be less profitable and the business is rarely taken seriously in demand by farmers, but other business areas such as fattening of rabbit, collectors, and post-harvest seems more desirable because it can provide a profit margin better. To see how far the rabbit breeding value gains in rural, financial analysis has been carried out by applying a factor of production values of the average laboratory and field results at several places in Indonesia in 2012. Important results of the technical aspects as follows: birth age to the first mating 6 months, calving interval 2 months, litter size 6 heads, productivity of does 65%, mortality by 4 months of age 20%. Aspect of feed is: parent or buck 100 g/head/days, pregnant does 125 g/head/days, lactating does 200 g/head/days and post weaning- 50 g/head/days. price of concentrate feed of IDR 4,500, -/kg, rabbits for breeds IDR 300,000,-/head, rabbits for meat IDR 50,000,-/head, pre-weaning rabbits IDR 25,000, -/head, candidate breed (4 months) IDR 100.000, -/head, disposed does IDR 70,000, -/head. Individual rabbit cage IDR 125.000, -/each. Labor is family. Business management is: a. Third born female candidates for its breeds and 20% for does replacement, the rest is sold, b. 4 months old rabbit male is sale, and c. The main feed is concentrates and grass used as feed supplement. Results obtained assuming from calculating all asset value and assuming all rabbits sold. By using the initial scale rabbit (20 does +3 bucks (Scale 1) to 130 does +20 bucks (scale 2)), then the population dynamics of rabbits for 2 years is: a. Scale 1: disposed rabbits are 22 head, bunnies 120 head, candidate breed are 29 head, for replacement stock are 15 heads and the number of sales are 504 heads candidates breeds and are 59 heads. b. Scale 2: disposed rabbits are 144 heads, bunnies 783 heads, candidat breed are 190 heads, for replacement stock are 95 heads and and the number of sales are 3,924 heads and candidates breeds are 348. By using Df = 12%, IRR results for scale 1 and 2 are 35.46% and 61.93% respectively, the B/C ratio scale 1 and 2 are: 1.09 and 1.23 respectively. The IRR dan B/C ratio result lead to the conclusion that rabbit business is still bankable at an interest rate above 12%.

Key Words: Financial Analysis, Breeding, Rabbit, Scale Business

INTRODUCTION

Indonesia is rich in natural resources that available abundantly, good for businesses in agriculture and non- agriculture. In agriculture, the role is quite prominent due to the existence of farm crops and livestock functions that are supporting each other to carry the lives of millions of farmers in the countryside. The existence of livestock in Indonesia is diverse and prominent and some of them have a business orientation such as cattle, buffalo, goat, sheep, chickens, ducks and rabbits

In the meant of rabbits deployment, it was not evenly distributed in all provinces in Indonesia. The existence of a prominent rabbits farming for food supply and hobby, generally found in the location - location of tourism. While specific breeds of rabbits for a hobby or contests is maintained in many urban and

generally this kind of rabbits are more expensive (higher price) than another breed that are sold for meat.

The increasing population, income levels and many more tourist sites, the level of need of meat is also increased, including rabbits meat. Along with the increasing demand for rabbits breed and rabbits meat, so a good and profitable breeding practice on rabbits is needed to maintain the quality and number of the population.

One motive attractiveness to development in rabbits breeding, is to show that the business is beneficial and profitable in the specified cycle of time. Through the rationale and the determination of the input factors, the outputs and the rabbit breeding business feasibility, this means that the analysis in general should be done, with adequate technical assumptions, before the business is taken placed.

BENEFITS OF RABBIT

For human being, rabbits farming have quite a lot roles and a functions, such as:

1. High-quality food source in the form of meat: This product contains substances most complete foods in accordance with the needs of the human body that is for basic living, for growth and development.
2. As a means of improving the quality of the environment; through a socio-economic approach, it can be seen that the development of rural and urban areas, livestock can give new hope to improve the standard of live of farmers, and also to open up employment opportunities.
3. As an alternative means of storage of funds (savings); this can be achieved when the cattle are maintained and managed properly, and at times requires the animals to be sold to obtain the desired value for money.

COMPONENTS OF BUSINESS

Rabbit breeding business component type, consisting of:

1. Component input
2. Component output
3. Components of technical coefficients and prices
4. Technical feasibility analysis.

Component input

Input component consists of:

1. Livestock: types and amount
2. Feed: forages and concentrates
3. Cages and equipment: types and amount
4. Health: drugs
5. Labor: family & wages.

In this component, it is separated between the fix components (*e.g.*: cattle, cages) and unfix components (operationals) (*e.g.*: feed, medicine, labor).

Output component

Output components consisting of:

1. Sales of rabbits: breed, rabbits virgin or young

2. Sales of waste: dung and urine of rabbits
3. Asset: rabbits, cage and equipment

TECHNICAL FEASIBILITY ANALYSIS OF BUSINESS

Analysis of this business uses techniques: Analysis of Benefit and Cost (B/C Ratio), Net present Value and Internal Rate of Return (IRR), as described by Rangkuti (2012).

Benefit and cost analysis (B/C ratio)

Cost

Cost is everything that is invested, either in the form of money, land, and buildings, labor, and other assets required in the production process to produce a particular product (Pervaiz & Knipscheer 1989). Cost is classified:

Fixed costs

Fixed costs are the types of costs during the period of work is fixed, and does not always change. Fixed costs typically associated with time, or with the agreement. Fixed costs that are usually in the form: asset depreciation, salaries, insurance, rent, maintenance, interest and indirect costs more.

Understanding of depreciation

Depreciation: is a decrease in the value of a tool/goods as a result of the increase in service life. The things that lead to the reduced value of the tool among these parts - parts that are damaged or worn due to the length of time that the use of such a device does not work with capabilities like before. The cost of depreciation is a function of the time period then use the tools we need to know. The lifespan of device can be distinguished from the two terms, namely the economic life and service life.

1. Economic life is a tool from at the age of 100% new condition to the tools/items that are no longer economical when continuously used. At the end of the economic life of these tools still have value.

2. Service life is the life of the tool from the initial purchase in 100% new condition until the device dies (damaged) and items must be removed, so that the equipment/goods at the end of service life does not have value.

Model calculation of depreciation, there are several ways, but the most practical and convenient model is in a straight line. In this model the cost of depreciation is considered the same every year, or a decrease in the value of a device is fixed to the end of its economic lifespan. How to calculate is that initial price minus the final price divided by the economic life of its economic lifespan. The equation used is:

$$D = (P - S)/L,$$

D = depreciation expense per year,
P = initial price (IDR/unit)
S = final price (IDR/unit),
L = the estimated economic life (years)

Variable costs

Variable cost are costs incurred at the time (tool/item) operates, the amount depends on the number of units of consumption. These costs go up and down together with the volume of activity. Increased production is caused the increased variable costs and also the other way. The examples of the variable costs are: food, medicine, daily labor, equipment consumables, etc.

Revenue

Revenue is multiplying the price by the number of products produced. Results rabbits were obtained from the sale of breeding rabbits that can be life and other products dung, urine, etc.

Profit and benefit (B)/C ratio

Benefit (Z) is the difference between total revenue (TP) with the total cost (TB) is

required from the production and marketing of a product. If the result of benefit is positive then called profit, but if the result of benefit is negative, it is called a loss. But, B/C ratio is divided by TB. Mathematically is described as follows:

$$Z = TP - TB$$

$$\text{Benefit Ratio (B/C)} = TP/TB$$

Z = 0, means no profit and no loss (break even) or the B/C = 1
Z = positive value means to gain profit or B/C >1
Z = negative value means to obtain damages or B/C <1

Internal rate of return (IRR)

Another measurement commonly used in the feasibility analysis of a business is "internal rate of return" (IRR), which is where the interest rate such that the net present value is equal to zero. In other words, income or Discounted Benefit is equal to the discounted cost. A project is said to have economic visibility if NPV >0 or Present Value Benefit (PVB) > Present Value Cost (PVC). This analysis is often used to analyze the economic visibility of a long-term project. IRR is the rate of return on capital employed in the project, whose value is expressed in percent (%) per annum. A project is feasible, if the calculated IRR is greater than the prevailing bank interest rate. IRR calculation formula is:

$$IRR = I' + \frac{NPV'}{NPV' - NPV''} \times (I'' - I'),$$

I' : the interest rate on the positive value
I'' : the interest rate on a negative value
NPV' : the NPV at an interest rate I'
NPV'' : the NPV at an interest rate I''

Assumption

Technical coefficient and unit price assumptions is presented in Table 1.

Table 1. Technical coefficient and unit price assumptions

Items	Technical coefficient	Note
Birth age (month)	6.000	
Calving Interval (month)	2.000	
Litter size (head)	6.000	
Productivity of does (%)	65.000	
Pre-weaning mortality (%)	10.000	
Mortality from weaning to slaughter age (%)	10.000	
Slaughter age (month)	4.000	
Slaughter weight (kg)	2.500	
Pre-weaning age (days)	30.000	
Sex ratio	0.500	
Mortality does or bucks (%) - 6 months	1.500	
Feed consumption (gram/head/day):		
Concentrate		
Does not pregnant	0.100	
Does pregnant	0.125	
Does weaning	0.200	
Bucks	0.100	
Young to slaughter age	0.050	
Price of input- output:		
Concentrate price (IDR 000 /kg)	4.500	
Rabbit breed (IDR 000 /head)	300.000	
Rabbit Sloughter (IDR 000/head)	50.000	@ IDR 20,000/kg
Pre weaning kid (IDR 000/head)	25.000	IDR 10,000-40,000
Age = 2 days kid (IDR 000 /head)	3.000	
Does rejected (age >2 years) IDR 000 /head	70.000	
Forage (IDR 000 /head/day)	0.150	
Labour	-	Family
Cages (IDR 000/head)	125.000	
Vaccines (IDR 000/head/periode)	0.100	
Candidate breed- age \pm 4 months (IDR 000 /head)	100.000	

BUSINESS MANAGEMENT

Business financial analysis of rabbits using the following rules:

1. A Third parity of female for prospective breeding stock (20% for replacement stock and 80% sold as breeding stock).
2. Born male 4 months of age sold as breeding stock-price @ IDR 100,000/head. Analysis of 2 years.
3. The main feed is concentrate. Asset cage/facilities, feces and urine are not calculated.

4. Revenue is earned from selling of male rabbits-age 4 months, breeding stock 4 months of age.
5. The rabbit business is analysed in 2 years period.

RESULTS AND DISCUSSION

The use of assumptions and scenarios result from table as mentioned earlier, has made the results of a scenario analysis of breeding rabbits in the different scale businesses (from

20 does + 3 bucks to 130 does + 20 bucks). The results of rabbit population dynamics and the value of benefits, B/C ratio and IRR are described in the Table 2 and Table 3.

Rabbit population dynamics in different initial scale

From Table 2 shows that the total assets of the rabbit at the end of 2 years of calculation, the scale increases with the number of initial ownership of the parent rabbits. Initial scale of rabbits farming consist of 20 does and 3 bucks will yield 164 individuals (22 culled, 120 young does, 29 buck and 15 does for replacement) and the number of rabbits sold were as much as 685 heads in various ages. The conditions of rabbit assets will be different when the initial scale of the rabbits business comprised 130 does and 20 bucks that will be yielding 1,067 individuals (144 of culled, 783 of young does, 190 of young bucks and 95 does of breeding tock for replacement) and the number of sales will be as much as 4,452 heads in a various of ages.

Benefits, B/C ratio and IRR

From the Table 3 shows that: (a). The value of the revenue is greater than the value of the cost in each of the different scales, so that the business in all scales shows a profit, although the condition has been included the discounting factor on degrees of 12% (bank interest); (b). The value of the benefits increases with the increasing scale of the initial population of rabbits reared in the farm (eg, profits reached IDR 5.91 million at the beginning of the rabbit population of 23 heads up to IDR 83.54 million of the profit in the initial population of 150 heads); (c). The B/C ratio >1 is in all condition scale, this mean that the business is feasible. These results indicate the same assessment of the opinion of previous researchers, such as Anonymous (2010a), Anonymous (2011b), Herawati & Juarini (2007), and Nur & Subagiyo (2011) that rabbits breeding at different scales is still favorable to the value of B/C ratio between 1.72-2.70; (d). Value of IRR in all scales condition is more than 12%, so that this business is called "bankable". It's result is the same as reported by Sumanto et al. (2012); Sumanto & Juarini (2012).

Table 2. Rabbit population dynamics in different initial scale during 2 years

Initial rabbit population	Scale of business (head)						
	20♀+3♂	40♀+6♂	60♀+9♂	80♀+12♂	100♀+15♂	125♀+18♂	130♀+20♂
Rabbit population during 2 years (head):							
Rejected does/bucks	22	44	66	88	110	137	144
Young male/female	120	241	361	482	602	753	783
Candidate does	29	58	88	117	146	183	190
Replacement for does	15	29	44	58	73	91	95
Rabbit total asset	164	328	493	657	821	1.026	1.067
Rabbit selling during 2 years (head):							
Rabbit male-age 4 months	397	794	1.191	1.588	1.985	2.481	2.580
Young does-age 4 months	207	414	625	827	1.034	1.293	1.344
Does	59	118	177	236	296	370	384
Rejected does/bucks	22	44	66	88	110	137	144

Note: ♀: does, ♂: bucks

Table 3. The Value of Benefit, B/C Ratio and IRR in Different Initial Scale for 2 years

Initial Rabbit Population	Scale of Business (head)						
	20 ♀ + 3 ♂	40 ♀ + 6 ♂	60 ♀ + 9 ♂	80 ♀ + 12 ♂	100 ♀ + 15 ♂	125 ♀ + 18 ♂	130 ♀ + 20 ♂
Total Cost (IDR 000):	73.124	135.982	198.839	261.696	324.554	402.009	419.584
Investasi (breed, cages)	24.150	48.300	72.450	96.600	120.750	150.150	157.500
Operasionals	48.974	87.682	126.389	165.096	203.804	251.859	264.084
Revenue (IDR 000):	83.746	167.528	252.292	335.055	418.819	523.317	544.603
Benefit (IDR 000)	10.640	31.546	52.453	73.359	94.265	121.308	125.019
NPV Cost (df=12%) (IDR 000)	62.687	117.073	171.459	225.846	280.232	347.218	362.476
NPV Revenue (df=12%) (IDR 000)	68.601	137.202	205.803	274.404	343.005	428.591	446.017
Benefit (df=12%) (IDR 000)	5.910	20.129	34.344	48.558	62.773	81.373	83.540
IRR (%)	35,46	53,35	57,93	60,02	61,22	62,73	61,93
B/C Ratio (df=12%)	1,09	1,17	1,20	1,22	1,22	1,23	1,23

Remarks: df = discount factor

CONCLUSIONS

All the scale of the rabbits business (23 up to 150 heads) are profitable. According to the B/C Ratio and the IRR value, the rabbits business is bankable.

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