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Break even point analysis of backyard chicken hens in Sidenreng Rappang Regency South Sulawesi

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Abstract. This study aims to analyze the Break-Even Point of Backyard of laying hens business in Sidenreng Rappang Regency. This research was conducted in Bulu Village, backyard farm. This research was conducted from February to April 2020. In this study used a case study, results of the research are not generalized. The total profit earned by these people's farm is IDR 137,717,244. For the price of IDR 37,000 eggs, it will reach BEP at 1,617,723/egg, IDR BEP will reach IDR 1,436,727,272 with a egg price of IDR 888 /egg. With a price of IDR 38,000 BEP, the figure is 1,284,075/egg, the IDR BEP is IDR 1,436,727,272, the price is IDR 1,118/egg. The BEP calculation for the price of IDR 39,000 will reach BEP at 1,059,030 per egg and the BEP for IDR 1,436,727,272 with a BEP price of IDR 1,356/egg. Egg price fluctuation is influenced by supply and demand.

1. Introduction

The Indonesian government gives large support to the development of poultry chicken. This is proven by the passing of some the policy governing the existence and sustainability in its undertakings animal husbandry laying the start of the purebred chicken procurement livestock production facilities came to marketing. The Policy was carried out through efforts to improve the development of the livestock industry laying purebred chicken both in terms of nor qualitative , as well as in to raise the income of the cattle farmer and expand the opportunities [1].

South Sulawesi it has animal husbandry people laying hens is growing rapidly at the same areas such as Wajo, Pinrang, Bantaeng, and some other regions sidrap [2]. Some areas have livestock in the long ago and still be able to hold on to develop, until now while in Sidenreng Rappang Regency laying chicken is a business that got that incredible ramp-up and can be seen from the increasing number of cattle production and the number of a chicken farmer laying [3].

The development of animal husbandry laying chicken in Indonesia, in general develops very rapidly to meet consumption chicken domestic do not have to do imports chicken from outside [4]. This condition be a motivation for breeders to maintain achievement include and trying to expand. Animal husbandry chicken having the same laying in terms of income because it can be obtained from the sale of meat, feces, also from the sale of eggs.

Animal husbandry laying hens in Kulo developing rapidly and effectively, And the commodity



chicken (super chicken white and developed of the production of eggs) that possesses the 1500 tail/groups with members of the group as much as 20 in 2008 through cooperation with the government and third-party PNPM-AP in this case (The National Community Empowerment Program- Agribusiness Rural). One year after, farm the farmers to take livestock products into laying hens arguing that a super lacking in, desired results in addition to reproductive, long super chicken are also considered. Since then the business of a farm chicken farmers laying become choice and started to reached 108 total number of livestock farmers self-sufficient with average 200–3000 chickens laying across 5 villages out of village 11/ bulo urban villages.

Animal husbandry of the people backyard in sidenreng rappang district has a different price, so as to know break even point animal husbandry of the people backyard then done research on the analysis break even point the people in animal husbandry backyard Sidenreng Rappang Regency.

2. Materials and methods

2.1. Location and time

Study was conducted in the village bulo bulo sub Sidenreng Rappang Regency on farms of the people. The research was conducted on the February until April 2020.

A method of case study (case study) is a research that is the case, so that the result of research not in general.

2.2. Number of samples

The data analysis used is numerical descriptive and a verbal manner descriptive numerical for calculating the income farmers. A verbal manner is the way to use words to explain something while using mathematical analysis. the break-even point The break-even point analysis is a situation where cattle producers did not experience losses and also no advantage , or profit equal to zero. The analysis break even point can be written by a formula [5]:

$$BEP(Q) = \frac{TFC}{Hy - \frac{TVC}{Y}}$$

$$BEP(Rp) = \frac{TFC}{1 - \frac{TVC}{S}}$$

BEP	= Break even Point
TFC	= Fixed Cost
TVC	= Vaeriable Cost
Hy	= Product / Unit Selling Price
Y	= Product Quantity
S	= Sales Results / Total Revenue

3. Result and discussion

3.1. Mathematical cancellation of breakeven point principles of costing

3.1.1. *Fixed cost.* Fixed costs constitutes one of the elements production cost in business maintenance of chicken laying , whose value fixed or not in stir a few many the sheer number of livestock in pet .In a condition however cost to be out by farmers who keeping livestock of chicken laying be the same although happened addition or reduction in the amount of cattle in pet. Fixed costs can be seen in table 1 .

Table 1. Fixed costs for the laying chicken farming business.

Cost type	Total	Price (IDR)	Total
Cost of depreciation			
Building	2	50,000,000	18,000,000
Battery enclosure	3	50,000,000	28,000,000
Car	1	80,000,000	12,000,000
Motorcycle	1	15,000,000	2,000,000
	Sub total		60,000,000
Depreciation equipment costs			
Bucket	3	25,000	80,000
Cart	1	500,000	160,000
Sprayer	1	500,000	200,000
Water pump	1	1,800,000	340,000
Water reservoir	1	2,000,000	380,000
Shovel	2	50,000	32,000
	Sub total		1,192,000
Salary			
Leader	1	2,500,000	60,000,000
Staff	1	2,000,000	48,000,000
Employee	1	1,500,000	36,000,000
	Sub total		144,000,000
Pbb	2	130,000	260,000
	Total		205,452,000

Primary data processed, 2020

Table 1 shows a breakdown of all initial costs incurred by the farmer before starting the business of laying hens. It can be seen that the largest average cost is in the type of salary cost with an amount of IDR 144,400,000 per period. For the lowest initial expenditure, the PBB fee is IDR 260,000 per period.

3.1.2. Variable cost. In addition to fixed costs there are also costs that must be borne by laying hens breeders, namely variable costs. Where, variable costs are costs incurred by laying hens during the maintenance period, the amount of which depends on the number of laying hens raised, or variable costs can vary according to the number of livestock raised. This is by the opinion of [6] which states that the variable cost is the cost of the size influenced by the cost of production. For variable costs, see table 2.

Table 2. Fixed costs for laying chicken farming businesses.

Cost type	Total	Price (IDR)	Total
Feed			
Feed starter 1–4 weeks	2,500 kg	7,300	18,250,000
Feed starter 5–8 weeks	5,000 kg	7,100	35,000,000
Pullet feed 9–20 weeks	29,000 kg	7,100	205,900,000
Feed production 21–104 weeks	248,000 kg	7,000	1,735,993,784
Sub total			1,995,143,784
Doc	4000 DOC	12,000	48,000,000
Medicines and vaccines			
Medistress	1	17,000	17,000
Vita chick	1	40,000	40,000
Nd-AI	28 bottle	150,000	3,200,000
Nd-IB	4 bottle	175,000	700,000
Vaccinator	1 person	200,000	200,000
Egg tray	2,065	685	1,424,981
Electricity	450 va	300,000	7,200,000
Sub total			60,781,981
Total			2,055,925,765

Table 2 shows a breakdown of all fixed costs incurred by laying breed hens. It can be seen that the largest average cost is in the type of feed cost with an amount of IDR 1,995,143,784 per period. For the lowest initial expenditure, the vaccinator costs IDR 200,000 per period.

3.1.3. Total cost. Total Cost is the sum of fixed costs and variable costs that must be incurred by laying breed hens during one maintenance period. Fixed costs and variable costs, if added together are total costs, besides that production costs can be classified into fixed costs and variable costs. Fixed costs are costs that are fixed in number and do not depend on the size of the production quantity. Meanwhile, variable costs are costs that change and change according to the size of the production volume [7]. To find out the total cost of the farm can be seen in Table 3.

Table 3. Total costs of laying chicken farming business.

Cost type	Total (IDR)
Fixed cost	
Total depreciation	61,192,000
Salary	144,000,000
Pbb	260,000
Sub total	205,452,000
Variable costs	
Feed	1,995,143,784
Doc	48,000,000
Egg rack	1,414,981
Electricity	7,200,000
Drugs and vaccines	5,157,000
Sub total	2,056,915,765
Total cost	2,262,367,765

Primary data processed, 2020.

Table 3 shows that the largest total cost comes from variable costs, namely IDR 2,056,915,756 this is because in variable costs there are feed costs and DOC costs which are the biggest costs in the business of laying hens. While the lowest is fixed costs, namely IDR 205,042,000, this is because the amount of fixed costs is not influenced by the size of the production scale.

3.1.4. Revenue. Revenue from laying chicken farms is the entire farm receipts from the sale of the production. The revenue is calculated only in the form of cash received by the respondent from the proceeds of the sale which is taken into account in the revenue [8].

Revenue is the total yield obtained by laying hens breeders, from the revenue during one production period. Acceptance of laying hens can be known by looking at the source of their acceptance from laying hens. This is in accordance with the opinion of [9] which states that the number of products sold is multiplied by the price offered is the amount of money received in exchange for farm products sold.

3.1.5. Total revenue. Total revenue is the sum of production results expressed in rupiah (IDR), namely egg sales and chicken reject sales. The average amount of income received by farmers. To find out the total revenue can be seen in Table 4.

Table 4. Total revenue of laying chicken farming.

Total revenue			
Eggs	Chicken rejected	Feces	Total revenue (IDR)
2,298,860,000	98,625,000	2,600,000	2.400,085,000

Primary data processed, 2020

Table 4 shows that the biggest source of income is eggs, amounting to Idr 2,298,860,000 per period, because eggs are indeed the main commodity from laying hens, while receipts from rejected chickens are amounting to Idr 98,625,000 per period, rejected chickens will only be sold if they are not able to produce optimally and for feces of Idr 2,600,000 per period.

3.1.6. *Income*. Revenue is money earned from the difference between the amount received from sales and the amount spent in marketing activities expressed in rupiah (IDR).

The amount of farmer income is calculated using an analysis of costs and revenues and profits is the difference between production costs and sales prices, profits can be obtained through the reduction of the total revenue obtained by the total costs incurred by laying hens breeders during one period. [7] states that profit is the difference between total revenues and costs. These costs can be classified into two, namely fixed costs and variable costs. To find out income in 1 period, it can be seen in table 5.

Table 5. Revenue of laying chicken farming.

Income		
In Flow	Out Flow	Net Flow
2,400,085,000	2,262,367,765	137,717,244

Primary data processed, 2020

From table 5 we get the breakdown of income in 1 period. The total income earned in one period is IDR 137,717,244 to obtain total income, the total revenue is reduced by the total costs incurred, then the total income obtained in 1 period. This is in accordance with [10] which states that the amount of farmer income is calculated using an analysis of costs and revenues. Revenues can be obtained through the reduction of total revenues with the total costs incurred by farmers.

4. Equations and mathematics

4.1. Breakeven point analysis

4.1.1. *Total production cost*. Total cost + variable cost = IDR 205,452,000 + IDR 2,056,908,756 = IDR 2,262,360,756

4.1.2. *Income*. Total revenue – production cost = IDR 2,400,085,000 - IDR 2,262,360,756 = IDR 137,724,244

4.1.3. *The BEP calculation for the egg price is IDR 37,000*. To find out the Break Even Point at the egg price of 37,000 can be seen in figure 1

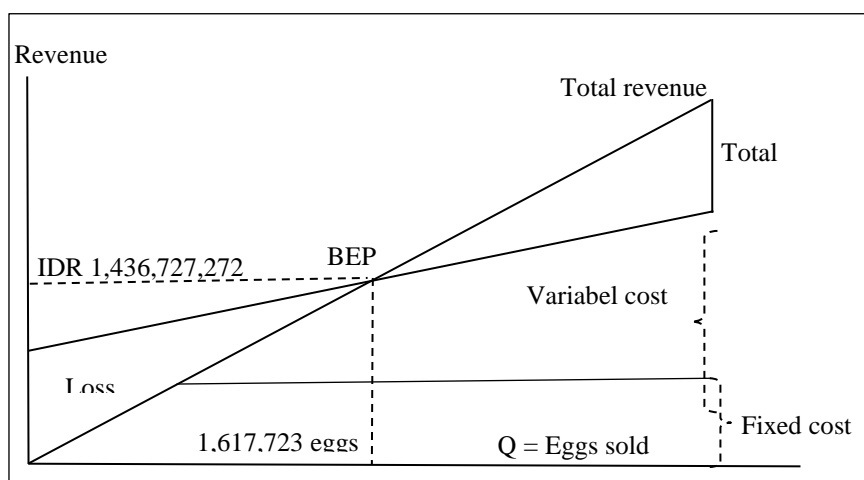


Figure 1. Break Even Point for 37,000 egg prices..

4.1.4. The BEP calculation for the egg price is IDR 38,000. To find out the Break Even Point at the egg price of 38,000 can be seen in figure 2.

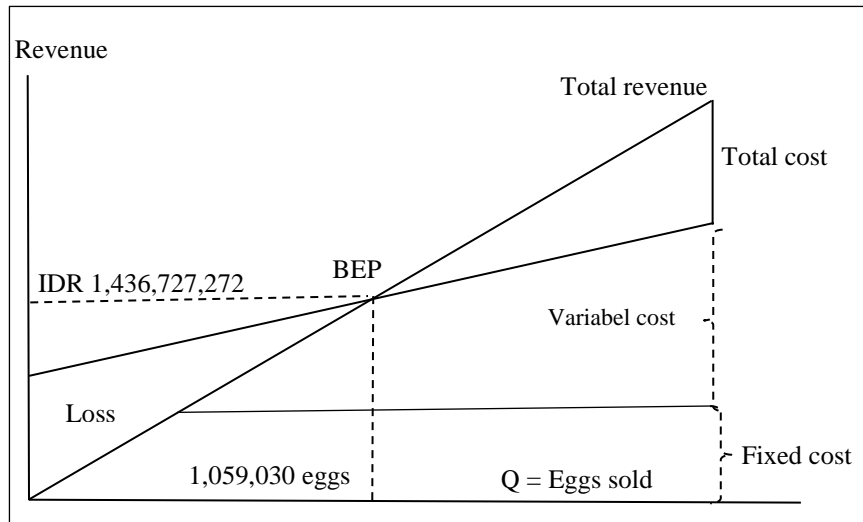


Figure 2. Break Even Point for the price of eggs IDR 38,000.

Laying chicken business at a price of Idr 38,000 per rack, the BEP results are in the number 1,284,075 for the unit and the rupiah BEP reaches IDR 1,436,727,272. If the BEP per unit is divided by the BEP price, the results for the egg price of IDR 1,118/eggs.

4.1.5. The BEP calculation for the egg price is IDR 38,000. To find out the Break Even Point at the egg price of 38,000 can be seen in figure 3

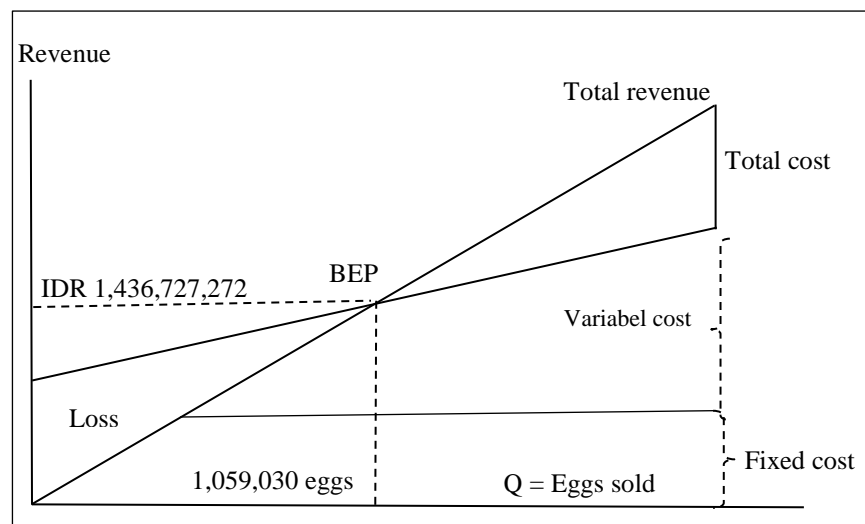


Figure 3. Break Even Point for the price of 39,000 eggs.

In the business of laying hens at a price of IDR 39,000 per shelf, the BEP results are in the number 1,059,030 for the unit and the rupiah BEP reaches IDR 1,436,727,272. If the BEP per unit is divided by the BEP price, the results for the egg price of IDR 1,356/eggs

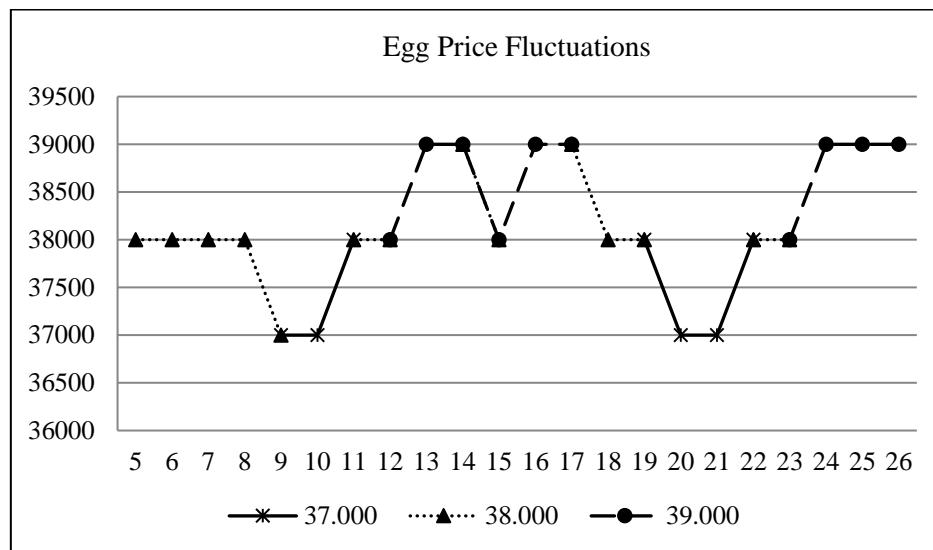


Figure 4. Egg Price Fluctuations.

The fluctuation of egg prices in this people's farming business occurs due to various factors. When experiencing an increase in price the cause is the high market demand for egg production. When prices fall, the cause is less market demand but soaring egg production. The price of feed also causes an increase in the price of selling eggs, when the price of feed increases, the price of eggs will follow the increase in the price of feed.

5. Conclusion

The total profit earned by this people's farm is IDR 137,717,244. For the price of IDR 37,000 eggs, it will reach BEP at 1,617,723 per item, IDR BEP will reach IDR 1,436,727,272 with a egg price of IDR 888/egg. With a price of IDR 38,000 BEP figures at 1,284,075/egg, the IDR BEP is IDR 1,436,727,272, the price egg is IDR 1,118/egg. The BEP calculation for the price of IDR 39,000 will reach BEP at 1,059,030/egg and the IDR BEP is IDR 1,436,727,272 with a BEP price of IDR 1,356/egg. Egg price fluctuation is influenced by supply and demand.

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