BEP and MOS of the Pullet Farming Partnership Scheme at Malang, Indonesia

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Abstract. The pullet farming was well-growing in line with the increasing its demand. However, this farming was unlikely the favourable venture because of the long harvest time (three months) than those of the layer farming. This phenomenon become attractive to deeply explore; since many farmers operated the pullet farming, particularly at Turen and Gedangan sub-district of Malang Regency, East Java Province of Indonesia. The study aimed to investigate the profitability and efficiency the pullet farming especially Break-even Point (BEP) and Margin of Safety (MOS) perspective. There were 23 pullet farmers that divided into three scale including scale-1 (controlling 4000-11,667 birds; n =14), scale-2 (having 11,668-23,335 birds; n=7), scale-3 (raising > 23,335 birds; n=2). Data collection on 24th-31st March 2015 used survey method. Data analysis employed descriptive technique using BEP and MOS formulation. Overall, the pullet farming partnership scheme has obtained little profit ranging (IDR 2,546 – IDR 3,630/ bird), less efficient venture (BEP: IDR 44,216 – IDR 44,489) and the quite high financial risk (MOS: 5.25% - 7.43%). However, regarding to the farm scales, the farming scale-3 exhibited the highest profit in comparison with other scales. In conclusion, the pullet farming that controlling more than 23,335 birds achieved the profit of IDR 3,630 per bird, with IDR 44,216 of the BEP price, and 7.43% of the MOS.

1. Introduction

The pullet farming might become phenomenon as they had long harvest time at about three until four months in comparison with daily layer production. Previous study gave evidence that layer farming was profitable venture [1], particularly the large farm size can achieve the higher profit margin [2] through enlarging the length of production cycle, the egg sale price and the laying percentage [3]. The pullet poultry sector has expanded over the past 10 years. It is possibly the quite growing and most driven primarily by very strong layer farming demand. Laying farmers may prefer to obtain the pullet instead the own rearing this livestock to minimise risk particularly in DOC period. In addition, farmer might encountered constraints such as lack of technical skills, shortage of land, feed quality and price, poor extension support, and market linkage problem in descending order [4]. However poultry company hasn’t capable to fulfil all demand, therefore they need farmers to grow pullet through collaboration with them in rearing pullet via sub-contract farming. The pullet farming emerges in the last couple years with the form of nucleus-plasma pullet partnership scheme. This partnership model has established dependence each other [5], shared in profit [6]; enhanced business activities, and encouraged economic
development among small scale farmers since it can overcome funding and quality of products constraints [7].

The pullet farming might less favourable venture as they had long harvest time (3 – 4 months) in comparison with the layer farm. In fact, the present more pullet farmers is often essential being the only asset farmer possess, and hence it becomes the primary livelihoods rural’s poorest people. Furthermore, the recognition of pullet farming is still low and its benefit may become questionable because of this new venture. This case becomes attractive to deeply explore especially from economic perspective. Hence, study aims to investigate the efficiency and the risk of pullet plasma farming with focused on Break Even Point (BEP) and Margin of Safety (MOS).

2. Materials and methods
The study located in Turen and Gedangan sub district, Malang Regency of East Java which chosen using multistage sampling method. Two considerations in determining study area included first, there was about 23 farmers or 23, 5% of total pullet farming through partnership scheme at “Prospect Karyatama” Company Malang. Second, this farming is a new livestock venture in Indonesia and involved in the fourth (turen and Gedangan sub district) of the biggest population of pullet farming through “Prospek Karyatama” Company partnership scheme in Malang Regency.

Case study was applied in this study. The total respondent was 23 pullets farming based on multistage sampling method. Consideration that Turen is the biggest population of pullet farming through partnership scheme at “Prospek Karyatama” Company in Malang Regency. The stages of the multistage sampling method as seen in the following paragraph.

Stage 1: Turen and Gedangan sub district was chosen by purposive sampling method with consideration that Turen is the biggest population of pullet farming through partnership scheme at “Prospek Karyatama” Company in Malang Regency.

Stage 2: 23 pullet farmers who participated in the partnership scheme of “Prospek Karyatama” Company were selected as respondent.

Stage 3: The selected respondents were stratified into three strata based on the number of pullet using the following equation:

Where: X = the total of biggest population farming
Y = the total of smallest population farming
Z = total class (scale)

\[ \text{Interval class} = \frac{X - Y}{2} = 7.667 \text{ birds} \]

Based on the interval class, the pullet farmer was grouped into three farming scales. There were

Scale-1 = total population 4.000 to 11.667 birds (14 farmers)
Scale-2 = total population >11.667 to 23.335 birds (7 farmer)
Scale-3 = total population >23.335 birds (2 farmer)

This study need about one month (24th to 31st March 2015) in obtaining the data. Interviews using a structured questionnaire are useful tools to get the primary data. Whereas, the secondary was prepared by the “Prospek Karyatama” Company in Kedungkandang sub district, Malang, and the related institutions.

3. Result and discussion
Farmer for scale-1 recognised the pullet farming as the secondary work (86%) and this farm composed with variety in farmer’s age. The high percentage (50%) was dominated by the productive age (43-64 years old), and followed by 43% of farmers aged 20-42 years old, with only 7% for farmer with more than 64 years old. The high school education attainment (64.30%), longest experience in operating pullet farming (6-10 years) was occurring in scale-1 (42.80%)

Farmer for scale-2 considered pullet farming as primary job (86%). Farmers with the productive age (43-64 years old) almost 100%, and the high experience about 1-5 years in managing pullet farming 57.10%), and possess in the high school attainment (71.4%). Farmer for scale-3 participated in the
pullet farming as the primary livelihood. They were the productive age (43–64 years old) and long experience in running pullet farming (6 – 20 years). Farmers in the scale-3 had similar percentage (50%) for both the elementary and high school education.

3.1. Production cost of pullet farming

Overall, the total production costs per farm are going up along the increase of the farm scale which starting with IDR 331,199,374 for scale-1, IDR 684,424,511 for scale-2, and IDR 1,176,087,283 in scale-3. However, for one pullet, farmers in scale-3, has utilised the lowest expenses about IDR 45,234 than those IDR 45,263 for scale-2 with the greatest one approximately IDR 45,904 in scale-1.

Variable costs have dominated for all scales and it is ranging from 96.92% to 97.94%, whereas the fixed expenditure is only account between 2.06% and 3.08%. However, [8] has discovered that layer farming pullet phase spent cost per period (4 months) about IDR 37,626/bird consisted of 6.67% of fixed cost and 93.3% of total production cost. This study explains that the efficient expenditure comes from scale-3 of IDR 45,263 which structured by 97.94% of variable cost and 2.06% of fixed expenses. Scale-2 exhibits the lowest fixed cost (2.06%) in comparison with those of scale-3 (2.25%) and scale-1 (3.08%).

Figure 1. Fixed cost of pullet farming by scales

In general, the labour expenses were highest percentage among these scales, especially for scale-1 (1.60%) (Figure 1.). It is because the pullet farming is considered as the secondary job, and therefore, all activities in pullet farming used hired labour. The depreciation also very costly in the scale-1 and it is account about 1.05%. 
In regard to variable costs in scale-3, the efficient feed expenses were emerging in scale-1, followed by 78.30% for scale-3, and 78.68% for scale-2 (Figure-2). This invention is higher than the study of Destiana (2010) that production cost in farming was composed by 70% of feed cost. Likewise, the lowest DOC cost showed in scale-1, whereas scale-2 and scale-3 had the similar number about 11.05%.

3.2. BEP of pullet farming
Break Even Point (BEP) price pr bird showed the efficient in the large scale about IDR 44,216 (Figure 3.). It means that the scale-3 need only IDR 44,216 sales of minimal revenue to cover the production cost in yielding one bird pullet. It is also evidence that pullet farming is efficient venture based on BEP (IDR 38,929 per bird) and R / C ratio (1.05) [8], while layer farming can obtain BCR of 1.39 [9]. BEP was IDR 44333 for business improve to meet profitability for scale-2. Whereas, the sales has only IDR 444,89 to cover the total cost production of per bird pullet for scale-1.

3.3. Revenue of pullet farming
Four kind of revenue namely selling pullet, feed sacks, excreta, and bonus composed the pullet farming revenue. The revenue for selling pullet was quite higher which more than 90% Generally, the highest
revenue come from selling pullet ranged 96.85% -97.46%. Whereas, selling excreta was the lowest contribution ranging 0.21 – 0.23%.

![Figure 4. The kind of revenue for pullet farming by scales](image1)

Based on the farm scale, scale-1 had the largest percentage in selling pullet about 97.46% and selling excreta approximately 0.23% than those for other scales. This finding was little bit lower than the previous study in that selling pullet contribute about 98.66% to total revenue [10]. Bonus and feed sacks supported more revenue about 2.64% and 0.30%, respectively for scale-3. It was interesting in scale -1, in which about 50% (43-64 years), 43% (20-42 years, and only 7% (> 64 years).

![Figure 5. Total revenue of pullet farming by scales](image2)

The revenue per farm is growing in line with the increase of enterprise scale from IDR 349,566,021 in scale-1 to IDR 733,600,989 in scale-2 and IDR 1,270,468,726 in scale-3. Figure 5 depicted that the revenue shows a bit larger in scale-3 (IDR 48,864) in comparison with scale-1 (IDR 48,450) and scale-2 (IDR 48,445) in yielding one pullet per production period (16 weeks). Selling pullet has contributed the highest proportion ranging 96.85% -97.46%, whereas bonus placed in the second order about 2.13% -2.64%. The greatest revenue in scale-3 consists of 96.85% of selling pullet and 2.64% of bonus.

3.4. MOS of pullet farming
Margin of safety (MOS) explains how much sales are going to drop before they enter in loss territory. It also refers to the difference between the actual sales and the Break even point of pullet poultry was
quite low of less than 10% (Figure 6). This MOS implied the level of risk that occur in the farm is quite high. Little percentage of MOS showed the unsafe farming.

![MOS of pullet farming based on scales](image)

**Figure 6.** MOS of pullet farming based on scales

The best of MOS was scale-3 about 7.43%. More percentage of MOS in this scale exhibit the safe farming than those other two scales. That means that the sales allowed to decrease up to 7.43% or about 1,932 pullet before they starting enter into the loss territory. Like wise, the scale-3 still safe when the price of broiler decrease about IDR 3,562. The distance between the expecting sales and break even sales refers to buffer sales about 6.57% for scale-2, and 5.29% for scale-1.

Scale-2 should have revenue 6.57% be before Break Even and start to incur losses. Margin of safety of scale-1 implied the level of risk about 5.25% that occur in the farm. MOS analysis has found that even if the feed costs are high while pullet prices decrease, the poultry farm would still break even about IDR 45,904, IDR 45,263, and IDR 45,234 in scale-1, scale-2, and scale-3, respectively. However, if a worst-case scenario of low prices of meat/kg and high prices of feed and chicks occur, good management practices would be critical to maintain profit.

### 3.5. Profit of pullet farming

The pullet farming among scales has a positive MOS that means the farm is profitable with the amount less than 10%. This implied that this farming involve in the quite risk area. Figure 7 explains that profit per bird are going up along the farm scale which starting from IDR 2546 for scale-1, IDR 3,181 for scale-2, into IDR 3630 in scale-3. This finding confirmed with the layer farming profit that increase along with the enlarge in farm size [2][3]. Farmers in scale-2 however, has utilised the lowest expenses in yielding one pullet about IDR 45,263 than those IDR 45,434 for scale-3 with the greatest one approximately IDR 45,904 in scale-1.
Figure 7. Profit of pullet farming based on scales

The research results showed that the highest profit in pullet farming is in scale -3 (DR 3,630) compared with those in scale-1 (IDR 2,546) and scale-2 (DR 3,181). It is because scale-3 had more revenue of IDR 48,864 compared in scale I IDR 48,450/ and scale-2 of IDR 48,539 per bird. This implied that scale III was the most profitable in pullet farming through partnership scheme practice. The higher education of scale-3 will change people's behaviour in line with developments as individuals, because education give the foundation to be able to increase the power of thought and be able to access information and opportunity, an opportunity to move towards in prosperity. Education can improve the ability of the farmers to increase prosperity. Also, the length experience in rearing pullet is a facilitating factor in the running their far. Moreover, the length experience in operating this farm will give benefit to tackle the problem occuring in this farm.

4. Conclusions
Research on pullet farming with partnership scheme discovered that:

1. The pullet farming partnership scheme has obtained little profit ranging (IDR 2,546 – IDR 3,630/bird), less efficient venture (BEP ranged IDR 44,216-IDR 44,489) and the quite high financial risk (MOS: 5.25% -7.43%)

2. On the basis of farming scale, scale -3 exhibited the highest profit of IDR 3,630 per bird, less efficient in production cost with the BEP price per bird of IDR 44,216 and the largest MOS of 7.43% in comparison with other scales.

Suggestion
It was suggested that:

1. Plasma farmer should be maintenance the performance of farming to keep the fluency of business farm and increase the performance to get more efficient of business farm.

2. The nucleus company have to keep relationship with plasma farmer, to make a good partnership scheme.

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