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Analysis of the gross profit margin of broiler in the closed house at the Faculty of Animal Science - Hasanuddin University

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Abstract. This research was conducted in the closed house at the Faculty of Animal Science, Hasanuddin University from January to March 2020. The purpose of this study was to determine the gross profit margin obtained in the broiler business in partnership pattern in the closed house. The research method used was a case study method with a descriptive quantitative approach. The data used were primary data obtained from recording the necessary data for three production periods. The secondary data were obtained from the literature relevant to this study. The results showed that the gross profit margin of broiler farming in closed house varied such as follows: 9.5% for the first period, 7.5% for the second period and 9.6% for the third period. The difference in the level of gross profit margin was determined by the selling price, production and variable costs.

1. Introduction

Broilers have a very important role in meeting the needs of domestic animal protein. The advantages of broilers compared to other livestock commodities are growth fast with high body weight in a relatively short period, small feed conversion, ready to slaughter at a relatively young age, and producing meat with soft fibrous quality. Thus, the broiler farm business has prospects to be developed, seen from its production which is fast enough for market needs. Broiler can grow quickly and produce meat within 4–7 weeks.

The population and production of broiler chickens in South Sulawesi in the last three years tended to increase, namely the population in 2016-2018 each of 48,203,640; 97,922,456 and 101,990,626 tail while the production was 1,905,500; 3,175,850 and 3,495,090 tonnes. An increased production of broiler was supported by the housing system. A well ventilated enclosure will reduce the risk of high humidity. With a good cage condition, broilers free from stress and diseases, better feed consumption, body weight, and feed conversion ratio (FCR). One of the effective housing systems is the closed house. This cage has a higher density and can accommodate a larger number of broilers. Also, this cage uses more modern technology than open houses, so it can anticipate the problem of decreasing the productivity of broilers. This cage also ensures biological safety (contact with other organisms) with good ventilation arrangements to minimize stress on broilers. Of course, the productivity of a closed house will be different from an open house.



The broiler business in the closed house at the Faculty of Animal Science, Hasanuddin University is a newly established and operating in 2018. The broiler cage was built with a partnership pattern. The construction of this cage used high investment and operational costs. Therefore, with this partnership pattern, all cost problems can be resolved. PT. Bintang Sejahtera Bersama is the company (nucleous), while the Faculty of Animal Science Hasanuddin University is the manager of the closed house.

This partnership relationship is bound by a cooperation agreement contract between the two parties. The contract agreement has been agreed by PT. Bintang Sejahtera together with the Faculty of Animal Science, Hasanuddin University includes pricing for seeds or day old chick (DOC), feed, medicines, vitamins and vaccines, and the price of broiler chicken production per kilogram or the selling price of the harvest. These are factors that can affect the level of profit of a broilers farm. Of course, it is hoped that the closed house system managed by the Faculty of Animal Science, Hasanuddin University can be beneficial for both parties. One measure of success is if the ability to obtain gross profit, which is known as the gross profit margin, tends to increase from period to period.

This research was conducted to answer the phenomenon from this background so that this study has the aim of knowing the level of gross profit margin obtained in the broilers business with a partnership pattern in a closed house at Faculty of Animal Science, Hasanuddin University.

2. Materials and Methods

This research was conducted from January to March 2020 in the closed house at the Faculty of Animal Science, Hasanuddin University. The location selection was determined purposively because it was a closed house system for broilers. The research was descriptive quantitative research, which was the type of research that describes the gross profit margin obtained by the broilers business with a partnership pattern in a closed house at the Faculty of Animal Science, Hasanuddin University for three periods.

The type of data used in this research were quantitative data in the form of selling prices, production results, and variable costs. Qualitative data were a statement given by the broiler business manager with a partnership pattern in a closed house cages at the Faculty of Animal Science, Hasanuddin University. Meanwhile, the data source used in this research were primary and secondary data.

The method used in data collection in this study was a field study, which consisted of observation, namely data collection through observation and even being directly involved in the conditions and maintenance of the closed house. Interview was done with the manager of the closed house. A literature study was the efforts made by researchers to obtain various information related to the gross profit margin of the business by digging up various information that comes from scientific books, research reports, scientific essays, theses, and dissertations.

The data analysis used was descriptive statistics, namely calculated the gross profit margin obtained. Before determining the gross profit margin, the broilers business revenue was calculated. To find out the revenue at closed house cages, the following formula was used [2]:

$$\text{Total Revenue (R)} = Q \times P$$

$$\text{TR} = \text{Total Revenue (IDR/Period)}$$

$$Q = \text{Total Production (Kg)}$$

$$P = \text{Price per unit (IDR/Kg)}$$

The total revenue in the closed house came from the chickens and waste sales. The revenue from chicken sales was determined by the nucleous company, where the selling price of chicken was based on chicken weight per kilo and differs for each period. To calculate total revenue, the following formula is used [2]:

$$\text{Total Revenue} = \text{Revenue from broiler sales} + \text{Revenue from waste sales}$$

The gross profit was calculated by the following formula [3]:

$$\text{Gross profit} = \text{Revenue} - \text{Total variable cost}$$

The variable costs in this study include the costs of DOC, feed, medicines, vitamins, vaccines, gas for heating, litter, and labor. In this study, the cost of electricity was not calculated because of the difficulty in measuring its use.

To find out the profitability ratio in the closed house, the gross profit margin (GPM) method was used. This ratio measures the ability of the business to generate gross profit with the sales made by the business. Gross profit margin (GPM) used the following formula [4]:

$$\text{Gross profit margin (GPM)} = \frac{\text{Gross profit}}{\text{Sales}} \times 100\%$$

3. Results and discussion

3.1. Total variable costs

The total variable costs in the broilers business with the partnership pattern for three periods in the closed house cage can be seen in table 1.

Table 1 Total variable costs of broiler in closed house, Faculty of Animal Science, Hasanuddin University.

Variable Costs	Period 1 (IDR)	%	Period 2 (IDR)	%	Period 3 (IDR)	%	Mean (IDR)	(%)
DOC	8,766.60	25.1	8,706.66	25.8	8,555.56	28.4	8,675.61	26.4
Feed	23,357.45	66.9	2,273.90	65.9	19,635.42	65.9	21,755.59	66.0
Medicines, vitamins and vaccines	407.85	1.2	385.51	1.1	378.91	1.1	39.75	1.2
Gas	254.51	0.7	293.69	0.9	355.91	0.9	301.3	0.9
Litter	355.79	1.0	353.27	1.0	347.22	1.0	352.09	1.1
Labor	1,793.17	5.1	1,780.50	5.3	1,75.00	5.3	1,774.56	4.4
Total	34,935.36		33,791.54		31,022.89		33,249.93	

Based on table 1, the cost of feeds was the largest cost of the total variable costs by an average of 66%. The cost of feed were lower than what [5] stated that in the broiler business, feed played a very important role in ensuring the survival of the business. Feed costs greatly affect business because they account for 70–80% of total variable costs.

Electricity costs was not calculated into variable costs in this study. The use of electricity in the closed house enclosure of the Faculty of Animal Science, Hasanuddin University was combined with the use of other parts in the University so it was paid for by Hasanuddin University.

3.2. Broiler chicken farm business revenue

The revenue calculated in this study was the income from broiler production and waste which can be seen in tables 2 and 3.

Table 2. Revenue of broiler sales at closed house a the Faculty of Animal Science, Hasanuddin University.

Period	The number of chicken (tail/period)	Total of production (kg/period)	Price (IDR/kg)	Revenue (IDR)
1	21,080	41,528.4	19,505	38,426.33
2	21,230	41,398.5	18,655	36,377.37
3	21,600	40,175.3	18,370	34,168.51

Table 2. showed that the revenue from selling broiler in closed house decreased. The decline in revenue was due to a decrease in production volume and a decrease in price per kilogram. Determination of the selling price of chicken in closed house cage was determined by the nucleus company and the agreement by both parties in the partnership contract. Each period, the price of chicken per kilo varies, so it also affected the revenue earned in each period. According to [6], the theoretical selling price affected the income of UD Broiler Putra, because the income was obtained from the total selling price multiplied by the amount of production.

The yield of each period was also affected by mortality. Mortality was the rate of death of livestock obtained from the ratio of the number of chickens died with the number of chickens raised. With low mortality, production yields were also higher. Mortality of broilers in closed house ranged from 1.8%–4.1%. According to [5], a low mortality value will indirectly increased income. High mortality will affect the density level in the cage which was not too high [7].

Table 3. Revenue from sales of closed house waste at the Faculty of Animal Science, Hasanuddin University.

Period	The amount of waste sold (bags)	Price (IDR)	Revenue (IDR)
1	1,300	3,000	185.01
2	1,200	3,000	169.57
3	1,250	3,000	173.61

Table 3 showed that the revenue from waste generated each period also varies depending on the amount of product collected. The contribution of waste sales to total revenue in closed house cages was quite low, this was lower than what [8] stated that manure contributes to revenue from closed house at Diteg Farm, which was 0.7% of total revenue. The waste produced in the closed house came from a mixture of husks and feces.

Table 4. Gross Profit from broiler business in the closed house at Faculty of Animal Science, Hasanuddin University

Description	Total (IDR/tail)		
	1 st Period	2 nd Period	3 rd Period
Revenue			
Sales of broiler	38,426.33	36,377.37	34,168.51
Sales of waste	185.01	169.57	173.61
Total Revenue (IDR)	38,611.34	36,546.94	34,342.12
Variable cost			
DOC	8,400	8,400	8,400
Feed	23,357.45	22,273.90	19,635.42
Medicines, vitamins and Vaccines	407.85	388.51	378.42
Labor	1,718.18	1,718.18	1,718.18
Gas	254.51	293.69	355.79
Litter	340.91	340.91	340.91
Total of variable costs (IDR)	34,478.89	33,412.19	30,829.20
Total gross profit (IDR)	4,132.45	3,134.74	3,512.92

3.3. Gross profit margin

The gross profit obtained by the broiler business in the closed house can be seen in table 4. The gross profit from broiler business in closed house also varies due to variations in the amount of feed usage so that the cost of feed also varies. This was by the opinion of [9] that sales volume is a very important

factor affecting the size of the income that will be obtained by farmers for their efforts to carry out the maintenance of broilers.

Meanwhile, the gross profit margin was the company's ability to get gross profit. The amount of the gross profit margin ratio obtained by the broiler business in the closed house can be seen in table 5.

Table 5. Gross profit margin from broiler business in closed house at Faculty of Animal Science, Hasanuddin University (IDR/tail)

Description	1 st Period	2 nd Period	3 rd Period	Mean
Total revenue (IDR)	38,611.34	36,546.94	34,342.12	36,500.13
Total variable costs (IDR)	34,478.89	33,412.19	30,829.20	32,906.76
Total income (IDR)	4,132.45	3,134.74	3,512.92	3,593.37
Gross profit margin (%)	9.5	7.5	9.6	8.8

Table 5 showed that the level of gross profit margin for these three periods varies: 9.5% for the first period, 7.5% for the second period and 9.6% for the third period with an average of 8.8%. The gross profit margin ratio was lower than what [10] found that the profitability of farmers obtained was 9.48%, this profitability was calculated by comparing the net income with the production costs incurred (fixed costs and variable costs). This may be due to a higher production scale of 44,000 tail while the closed house at the Faculty of Animal Science, Hasanuddin University has a production scale of 22,000 tail.

4. Conclusion

The gross profit margin of closed house broilers farm business at Faculty of Animal Science, Hasanuddin University for three periods varied between 7.5%–9.6% (average 8.8%). The difference in the level of gross profit margin was determined by the selling price, production and variable costs.

References

- [1] Directorate General of Animal Husbandry and Animal Health 2018 *Animal Husbandry and Animal Health Statistics* Jakarta
- [2] Soekartawi 2003 *Principles of Agricultural Economics* Jakarta: Rajawali Press
- [3] Mulyana A 2018 Effect of production costs on gross profit *Sci. J. Manag. Account.* **1** 15–26
- [4] Sudana I M 2010 *Corporate Financial Management* Jakarta: Erlangga
- [5] Nizam 2013 *Income Analysis of Partnership Pattern Broiler Chicken Farmer in Bontomatene Village, Marusu District, Maros Regency [Thesis]* Hasanudin University Makasar
- [6] Santi N W A, Haris I A and Sujana I N 2019 The effect of selling price and sales volume on UD revenue Broiler Putra in Batumulapan Hamlet, Klungkung Regency in 2015–2017 *J. Econ. Educ.* **11** 116–27
- [7] Ratnasari R, Sarengat W and Setiadi A 2015 Analysis of broiler breeder income in the partnership system in the sub district of Gunung Pati, Semarang city *Anim. Agric. J.* **4** 47–53
- [8] Monita A 2017 *Profit Analysis and Business Scale at Closed House Cage at Diteg Farm Laying Chicken Company in Kinali District, West Pasaman Regency Thesis* Andalas University
- [9] Sudrajat and Isyanto A Y 2018 Factors that affect the income of Sentul chicken farming in Ciamas Regency *J. Agribus. Insight Sci. Soc. Thought* **4** 70–83
- [10] Mukminah N and Purwasih R 2019 The profitability of broiler chicken farming with different types of cages *Sci. J. Eng. Sci. Technol.* **2** 1–6