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Feed Production and Profit Levels of a Meat Duck Farming Business at UD. Golden Eat, Mataram

Produksi Pakan dan Tingkat Keuntungan Usaha Peternakan Itik Pedaging di UD. Golden Eat, Mataram

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ABSTRACT

This study aimed to analyze feed production and the profit levels of the meat duck farming business at UD. Golden Eat, Mataram, West Nusa Tenggara, in 2025. The enterprise has two separately analyzed units: a feed unit that produces and sells feed daily (analyzed per month) and a meat duck unit that rears 4,000 ducks on purchased commercial feed (analyzed per production cycle). Data from observation, interviews, and documentation were analyzed using cost, revenue, and income analyses, the revenue-cost ratio (R/C), and the profit rate. The feed unit mixed ground corn, rice bran, concentrate, and discarded bread (20:60:10:10), incurred costs of IDR 310,300,000, and earned a net income of IDR 89,700,000 per month (R/C 1.29; profit rate 28.91%). The meat duck unit earned a net income of IDR 39,918,000 per cycle (R/C 1.20; profit rate 19.93%), with feed accounting for 71.88% of costs. Both units were operationally profitable.

Keywords: Feed Production, Meat Duck, Production Cost, Profit Level, R/C Ratio

ABSTRAK

Penelitian ini bertujuan menganalisis produksi pakan dan tingkat keuntungan usaha peternakan itik pedaging di UD. Golden Eat, Mataram, Nusa Tenggara Barat, pada tahun 2025. Usaha ini terdiri atas dua unit yang dianalisis terpisah, yaitu unit pakan yang memproduksi dan menjual pakan setiap hari (dianalisis per bulan) dan unit itik pedaging yang memelihara 4.000 ekor itik dengan pakan komersial yang dibeli (dianalisis per siklus produksi). Data hasil observasi, wawancara, dan dokumentasi dianalisis menggunakan analisis biaya, penerimaan, dan pendapatan, rasio penerimaan terhadap biaya (R/C), serta tingkat keuntungan. Unit pakan mencampur jagung giling, dedak padi, konsentrat, dan roti afkir (20:60:10:10), mengeluarkan biaya Rp310.300.000, dan memperoleh pendapatan bersih Rp89.700.000 per bulan (R/C 1,29; tingkat keuntungan 28,91%). Unit itik pedaging memperoleh pendapatan bersih Rp39.918.000 per siklus (R/C 1,20; tingkat keuntungan 19,93%), dengan pakan mencapai 71,88% dari biaya. Kedua unit usaha menguntungkan secara operasional.

Kata kunci: Biaya Produksi, Itik Pedaging, Produksi Pakan, R/C Ratio, Tingkat Keuntungan.

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INTRODUCTION

Poultry farming is a crucial subsector in providing animal protein due to its high productivity and relatively short production cycle (Direktorat Jenderal Peternakan dan Kesehatan Hewan, 2023). One poultry commodity with potential for development is the meat duck, due to its high adaptability, rapid growth, and high protein content, making it a valuable source of animal food for the community (Kususiyah *et al*., 2022; Ismoyowati *et al*., 2012). The success of a meat duck farming business is heavily influenced by feed management, as feed costs can account for 60–70% of total production costs (Nuraini *et al*., 2023). Therefore, utilizing local raw materials and agro-industrial waste as alternative feed is a strategy to reduce production costs without compromising livestock nutritional needs.

Alternative feed ingredients from local resources and agro-industrial by-products are widely used to lower feed costs in poultry production. Rice bran can be included at higher levels in duckling diets than in chicken diets (Farrell, 1994), although its fiber content limits the inclusion level (Ruan *et al*., 2015). Bakery waste and other former food products can partly replace maize in poultry rations at a lower price (Chauhan *et al*., 2024; Pinotti *et al*., 2021; Georganas *et al*., 2023). Producing feed on the farm from these ingredients therefore allows farmers to control feed costs amid fluctuating prices of commercial feed and feed ingredients (Bist *et al*., 2024; Priyanto *et al*., 2025).

Efficient feed management and proper feed formulation are essential factors influencing productivity and profitability in poultry farming systems. Improving nutrient utilization efficiency can directly reduce production costs and increase farm competitiveness (Alhotan, 2021; Leeson and Summers, 2005). Previous studies on duck farming in Indonesia reported revenue-cost ratios ranging from 1.16 in a semi-partnership meat duck farm in Blitar (Zamrodah *et al*., 2024) and 1.22 in Indramayu (Nuralfiyani *et al*., 2024) to 1.38–1.66 in local duck farms in Central Java, where feed was the largest input cost (Ismoyowati *et al*., 2020). In Central Lombok, feed accounted for 74.67% of the variable costs of broiler farms (Nugroho *et al*., 2020). However, these studies assessed farm income based on purchased feed and did not separate the economics of on-farm feed production from that of duck rearing within the same enterprise. Information on the cost structure of independently produced feed and the profit level of meat duck farming in Mataram City is also not yet available.

UD. Golden Eat is a meat duck farming business in Mataram City that implements an independent feed production system using local raw materials and agro-industrial by-products. The feed produced is sold to external buyers, whereas the meat duck unit uses purchased commercial feed; therefore, the two activities form separate business units within one enterprise. The contribution of this study is to analyze the costs and profit levels of both units separately, so that the profitability of feed production and of duck rearing can be identified without assuming a causal effect of self-produced feed on duck farming efficiency. This study addressed three questions: (1) what are the composition and cost structure of feed production; (2) what are the revenue, production costs, and income of the meat duck farming business; and (3) what are the R/C ratio and profit rate of both business units. Therefore, this study aimed to analyze feed production and the profit levels of the meat duck farming business at UD. Golden Eat, Mataram.

MATERIALS AND METHODS

Materials

The object of this research is the meat duck farming business at UD. Golden Eat, Mataram City, West Nusa Tenggara, Indonesia. The materials observed include feed raw materials such as ground corn, rice bran, concentrate, and discarded bread, as well as the economic aspects of the business, including production costs, revenue, income, and profit level of the meat duck farming business.

Methods

This research employed a descriptive method with both quantitative and qualitative approaches. The descriptive approach was used to describe the conditions of feed production and management of the meat duck farming business, while the quantitative approach was used to analyze production costs, revenue, income, and profit level of the business.

Research Procedures

The research procedure began with a site survey and initial data collection regarding the feed production system and meat duck farming business at UD. Golden Eat, Mataram City. Data collection was conducted through observation, interviews, and documentation to obtain information related to the use of feed raw materials, feed production processes, production costs, revenues, and business income. Furthermore, data on fixed costs, variable costs, feed production, and revenues of the meat duck farming business were recorded. Data on the feed unit were calculated per production day and per month, with one month consisting of 25 production days, whereas data on the meat duck unit were calculated per production cycle (one harvest period) with a population of 4,000 ducks. The data obtained were then analyzed descriptively and quantitatively to determine feed production and the profit level of the business using production cost, revenue, and income analyses, the R/C ratio, and the profit rate.

The research was conducted at UD. Golden Eat in 2025. This study is an operational analysis of one production period for each business unit and not an investment analysis; therefore, discounting (discount factor), net present value, and internal rate of return were not used. The feed unit produces feed continuously every day, so its costs and revenue were recorded per day and summed for one month of 25 production days. The meat duck unit rears 4,000 day-old ducks per production cycle for [isi: ... days] until harvest, so its costs and revenue were recorded per cycle. Feed for the duck unit consisted of purchased commercial feed; the amount used in one cycle (12,000 kg or 3 kg per duck) and its price (IDR 12,000/kg) were obtained from the farm's purchase records. Because the feed unit sells all of its products, the revenue of the feed unit (per month) and that of the duck unit (per cycle) were not combined.

Observed Variables

The variables observed in this study were defined operationally as follows. (1) Feed production: the composition of feed ingredients (% of the mixture), the quantity of each ingredient (kg/day), and the volume of feed produced (kg/day and kg/month). (2) Production costs (IDR): fixed costs, consisting of the depreciation of cages and equipment, and variable costs, consisting of day-old ducks, feed, health, transportation, labor, cage hygiene, and, for the feed unit, raw materials, electricity, machine maintenance, and sacks; each component was calculated as quantity × unit price. (3) Revenue (IDR): the quantity of products sold multiplied by the selling price, including feed sales for the feed unit and sales of ducks and manure for the meat duck unit. (4) Income or profit (IDR): revenue minus total production costs. (5) R/C ratio: revenue divided by total production costs (unitless). (6) Profit rate (%): income divided by total production costs, multiplied by 100%.

Data Analysis

The data obtained were analyzed descriptively and quantitatively. Descriptive analysis was used to explain the feed production system and the conditions of the meat duck farming business, while quantitative analysis was used to calculate production costs, revenue, income, R/C ratio, and profit rate (Soekartawi, 1995).

Fixed costs consisted of the depreciation of cages and equipment, calculated using the straight-line method, D = (purchase value − salvage value)/economic life, and then allocated to one production cycle. The cages were valued at IDR [isi] with an economic life of [isi] years, and the equipment at IDR [isi] with an economic life of [isi] years, resulting in depreciation of IDR 4,572,000 and IDR 300,000 per cycle, respectively. Variable costs consisted of costs that change with the production volume, as listed in Table 4 for the duck unit and Table 1 for the feed unit.

- Calculation of production costs is done using the formula:

$$\boldsymbol{TC = FC + VC}$$

Description:
TC : Total Production Costs
FC : Fixed Cost
VC : Variable Cost

- Total revenue is calculated using the formula:

$$\boldsymbol{TR = P \times Q}$$

Description:
TR : Total Revenue
P : Product Selling Price
Q : Production Quantity

Table 1. Composition, Production Costs, Revenue, and Profit Level of Duck Feed Production per Month

Component	Quantity/day	Price (IDR/unit)	Total (IDR/day)	Total (IDR/month)
A. Raw materials				
Ground corn	400 kg	7,000	2,800,000	70,000,000
Rice bran	1,200 kg	4,500	5,400,000	135,000,000
Concentrate	200 kg	15,000	3,000,000	75,000,000
Discarded bread	200 kg	3,500	700,000	17,500,000
Subtotal A (2,000 kg/day)			11,900,000	297,500,000
B. Other production costs				
Labor	2 persons	100,000/person/ day	200,000	5,000,000
Electricity	1 day	200,000/day	200,000	5,000,000
Machine maintenance	1 month	300,000/month	-	300,000
Sacks	40 pieces (1,000/month)	2,500	100,000	2,500,000
Subtotal B			-	12,800,000
C. Total production cost (A+B)	25 days	-	-	310,300,000
D. Revenue (feed sales)	40 sacks of 50 kg	400,000/sack	16,000,000	400,000,000
E. Net income (D−C)				89,700,000
F. R/C ratio (D/C)				1.29
G. Profit rate (E/C × 100%)				28.91%

- Business income is calculated using the formula:

$$\boldsymbol{\pi = TR - TC}$$

Description:
π : Business Income
TR : Total Revenue
TC : Total Production Costs

- Business efficiency is analyzed using the revenue-cost ratio (R/C ratio), namely total revenue divided by total production costs (not profit divided by costs), with the formula:

$$\boldsymbol{R/C = \frac{TR}{TC}}$$

R/C > 1: the business is efficient and profitable
R/C = 1: the business breaks even
R/C < 1 : the business is not efficient or is experiencing losses

- The profit level is calculated as the profit rate, namely income relative to total production costs (Soekartawi, 1995):

$$\boldsymbol{PR = \frac{\pi}{TC} \times 100\%}$$

Description: PR = profit rate (%); π = business income (IDR); TC = total production costs (IDR).

RESULTS AND DISCUSSION

Duck Feed Production

The feed unit produces feed independently from local and alternative raw materials and sells it to external buyers; this feed is not used in the meat duck unit. Because feed is produced and sold every day, the feed unit is analyzed per month (Table 1), whereas the meat duck unit is analyzed per production cycle (Tables 2–5). The composition of raw materials, production costs, revenue, and income from the duck feed production business are presented in Table 1.

The data in Table 1 provides a comprehensive overview of feed ingredient usage, production costs, and business revenue and income levels during one month of production (25 production days). The raw

Table 2. Revenue from Meat Duck Farming per Production Cycle

No	Description	Unit	Price (IDR/unit)	Total (IDR/harvest)
1	Duck sales	4,000 heads	60,000	240,000,000
2	Duck waste	30 sacks	8,000	240,000
	Total			240,240,000

materials used were ground corn, rice bran, concentrate, and discarded bread, with compositions of 20%, 60%, 10%, and 10%, respectively. Each day, 2,000 kg of raw materials were mixed, so the feed unit produced approximately 50,000 kg of feed per month at a production cost of about IDR 6,206/kg, while the feed was sold at IDR 400,000 per 50-kg sack (IDR 8,000/kg). Raw materials accounted for 95.87% of the total feed production cost, and rice bran alone accounted for 43.51%. This composition indicates that rice bran is the dominant ingredient in feed formulations due to its relatively low cost and easy availability compared to other feed ingredients. With this formulation, the average cost of the raw material mixture was IDR 5,950/kg, lower than that of ground corn (IDR 7,000/kg) and concentrate (IDR 15,000/kg). However, excessive use of rice bran also requires attention, as its crude fiber content can affect feed digestibility if not balanced with sufficient energy and protein sources (Farrell, 1994; Ruan *et al*., 2015).

Ground corn is used as the primary energy source due to its high metabolic energy content, which supports livestock growth. Meanwhile, concentrate is added to meet the protein and other essential nutrients required for the growth of meat ducks. In addition to conventional ingredients, farmers also utilize discarded bread as an alternative feed. The use of discarded bread demonstrates innovation in utilizing agro-industrial waste to reduce production costs (Budiarto *et al*., 2023). Bakery waste is widely available and can partly replace maize as an energy source in poultry rations at a lower cost (Chauhan *et al*., 2024; Pinotti *et al*., 2021); in quail, bakery waste replaced up to 20% of maize without reducing growth or carcass yield (Gupta *et al*., 2023). The inclusion of agro-industrial by-products in feed formulations has also been recommended to lower feed costs in poultry production (FAO, 2013; Georganas *et al*., 2023).

The results of this study align with those of Edi (2021), who stated that the use of local raw materials can increase feed production cost efficiency and reduce dependence on commercial feed. Furthermore, Budiarto *et al*. (2023) reported that utilizing agro-industrial waste as an alternative feed ingredient can reduce production costs without significantly reducing livestock performance. With an R/C ratio of 1.29 and a profit rate of 28.91%, the feed unit generated IDR 1.29 in revenue and IDR 0.29 in profit for every IDR 1 of production cost. Thus, feed production at UD. Golden Eat is profitable as a separate business unit. However, because this study did not compare the formulation with other feeding systems, these results do not show that self-produced feed lowers the costs of the meat duck unit.

Meat Duck Business Analysis

1. Revenue

Revenue is one indicator for assessing the success of a livestock business because it shows the extent of the results obtained from production activities. Revenue is derived from the sale of meat ducks as the primary product and livestock manure as a byproduct. Details of meat duck farming revenue are presented in Table 2.

Based on Table 2, it is known that the total revenue of the meat duck farming business comes from the sale of meat ducks as the main product and the sale of livestock manure as a by-product. Based on the research results, total business revenue reaches IDR 240,240,000 per harvest period, with the largest contribution coming from the sale of meat ducks at IDR 240,000,000 (99.90%), while the sale of livestock manure provides an additional IDR 240,000 in revenue. The significant contribution of meat duck sales demonstrates that livestock productivity and population size are key factors in determining business revenue. With a production capacity of 4,000 heads per harvest period, UD. Golden Eat's livestock business is large enough to generate high revenue. Furthermore, stable market demand for duck meat also contributes to increased revenue.

Table 3. Fixed Costs of Meat Duck Farming Business per Production Cycle

No	Description	Total (IDR/harvest)
1	Depreciation of cage	4,572,000
2	Depreciation of equipment	300,000
	Total	4,872,000

Table 4. Variable Costs of Meat Duck Farming Business per Production Cycle

No	Description	Unit	Price (IDR/unit)	Total (IDR/harvest)
1	DOD	4,000 heads	10,800	43,200,000
2	Feed (commercial)	12,000 kg	12,000	144,000,000
3	Health	1 package	1,500,000	1,500,000
4	Transportation	1 pickup	1,000,000	1,000,000
5	Labor	2 persons	2,500,000/person	5,000,000
6	Cage hygiene	1 package	750,000	750,000
	Total			195,450,000

Farm revenue is closely associated with production scale and marketing efficiency. Larger-scale duck farming operations generally have greater opportunities to increase revenue through higher production volumes and better market access (Ismoyowati *et al*., 2020). The results of this study align with those of Nugroho *et al*. (2020) and Zamrodah *et al*. (2024), who reported that the primary revenue for poultry farming businesses generally comes from livestock sales, while by-products such as manure serve as additional revenue.

2. Production Costs

The production costs of a meat duck farm consist of fixed and variable costs. Details of the fixed and variable costs of a meat duck farm are presented in Tables 3 and Table 4.

- Fixed Cost

Fixed costs are costs whose size is not affected by the size of production. The components of each fixed cost are presented in Table 3.

- Variable Costs

Variable costs are costs whose amount depends on the level of production. The components of variable costs are listed in Table 4.

Based on the analysis, production costs consist of fixed and variable costs. Fixed costs include depreciation of cages and equipment used during the livestock production process. Although relatively small compared to variable costs, fixed costs remain a significant component because they represent long-term investments that support business continuity.

Meanwhile, variable costs consist of purchasing Day-Old Ducks (DOD), feed, labor, livestock health, transportation, and cage cleaning. Of all the variable cost components, feed costs are the largest, dominating total production costs. Feed accounted for IDR 144,000,000 or 71.88% of the total production costs, followed by DOD at 21.57%, whereas fixed costs accounted for only 2.43%. Feed costs are widely recognized as the largest expenditure component in poultry production systems. Consequently, improving feed efficiency and optimizing feed formulations are among the most effective strategies for increasing farm profitability and reducing production risks (Alhotan, 2021; Leeson and Summers, 2005).

This condition aligns with Nugroho *et al*. (2020), who found that feed accounted for 74.67% of the variable costs of broiler farms in Central Lombok, and with Zahra and Dewi (2025), who reported that feed accounted for approximately 60–70% of the production costs of duck farming and that choosing a lower-cost feed increased profit margins. Therefore, controlling variable costs, particularly in the feed component, is a crucial factor in improving the profit level of the meat duck farming business at UD. Golden Eat.

3. Cost-Revenue Analysis and Profit Level

The results of the cost-revenue and profit level analysis can be seen in Table 5.

Table 5. Revenue, Production Costs, and Profit Level of the Meat Duck Farming Business per Production Cycle

No	Description	Total (IDR)
1	Revenue	240,240,000
2	Production costs	
	a. Fixed costs	4,872,000
	b. Variable costs	195,450,000
	Total production costs	200,322,000
3	Net income (profit)	39,918,000
4	R/C ratio	1.20
5	Profit rate (%)	19.93

Based on Table 5, the profit analysis shows that the meat duck farming business is able to generate revenue greater than the total production costs incurred. This condition indicates that the livestock business is able to generate profits even though production costs, especially feed costs, remain the largest expenditure component in the production process. The high feed costs indicate that the success of the livestock business is greatly influenced by the efficiency of feed use and the farmer's ability to manage production costs. Because the meat duck unit uses commercial feed, its profit level depends strongly on the purchase price of feed (Ismoyowati *et al*., 2020; Harly *et al*., 2025; Santoso *et al*., 2023).

The R/C ratio of 1.20 indicates that every IDR 1 of production cost generates IDR 1.20 in revenue, and the profit rate of 19.93% indicates that every IDR 1 of production cost generates a profit of approximately IDR 0.20 per production cycle. These values show that the meat duck farming business at UD. Golden Eat is efficient and profitable, because an R/C ratio greater than 1 means that revenue exceeds total costs (Soekartawi, 1995). The R/C ratio obtained is comparable to that of meat duck farming in Blitar (1.16; Zamrodah *et al*., 2024) and duck farming in Indramayu (1.22; Nuralfiyani *et al*., 2024), but lower than that of local duck farms in Central Java (1.38–1.66; Ismoyowati *et al*., 2020). Duck farming outside Indonesia has also been reported to be profitable under semi-intensive rearing (Rima *et al*., 2025). The profit level of the meat duck unit (19.93%) was lower than that of the feed unit (28.91%), mainly because feed purchased at IDR 12,000/kg accounted for most of the duck rearing costs. The feed unit produced feed at about IDR 6,206/kg, so using self-produced feed in the duck unit could potentially lower feed costs; however, this possibility was not tested in this study and would require evaluation of the nutrient adequacy of the formulation and of duck performance. Financial performance is closely related to the farmer's ability to control production costs while maintaining productivity and market competitiveness (Priyanto *et al*., 2025).

Another study conducted by Ismoyowati *et al*. (2020) also showed that efficient production costs and business input management are crucial factors in improving the economic performance of duck farming businesses. This is in line with the performance of the meat duck farming business at UD. Golden Eat, which generates profits through control of production costs. From the perspective of animal feed science and technology, the high proportion of rice bran (60%) in the formulation needs to be evaluated against the nutrient requirements of ducks, particularly energy, protein, and crude fiber (National Research Council, 1994; Leeson and Summers, 2005; Baéza, 2016), because a cheaper formulation is only profitable as long as growth performance is maintained. Proximate analysis of the formulated feed and recording of feed conversion are therefore recommended so that the feed unit can lower costs further without reducing duck productivity (FAO, 2013).

CONCLUSION

Feed at UD. Golden Eat is produced independently from ground corn, rice bran, concentrate, and discarded bread (20:60:10:10) and sold as a separate business unit, with raw materials accounting for 95.87% of the feed production cost. In 2025, the feed unit earned a net income of IDR 89,700,000 per month, with

an R/C ratio of 1.29 and a profit rate of 28.91%. The meat duck unit, which uses commercial feed, earned a net income of IDR 39,918,000 per production cycle, with an R/C ratio of 1.20 and a profit rate of 19.93%, and feed was its largest cost component (71.88%). Both business units are operationally profitable. Whether using self-produced feed in the meat duck unit would increase its profit level requires further study comparing feed costs, nutrient quality, and duck performance.

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