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Financial Feasibility Analysis and Business Life Cycle Stage of Sun Farm Broiler Farming Business

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ABSTRACT

Sun Farm broiler farm is a broiler operation using a close-house, cage-type system that implements an all-in-all-out production model with a large broiler capacity. This study aims to: 1) analyze the amount of costs, revenue and income in the Sun Farm broiler farm business, 2) analyze the financial feasibility of the Sun Farm broiler farm business, and 3) analyze the stages of the business life cycle in the Sun Farm broiler farm business. This study was conducted at Sun Farm, a broiler farm that operates a closed-house cage system and an all-in-all-out production method, to provide a comprehensive understanding of its financial performance and business life cycle. Purposive sampling was employed to ensure that the selected location and informants were highly relevant to the research objectives, thereby facilitating the collection of accurate and meaningful data. Five informants were carefully selected based on specific criteria, and data were gathered using a combination of questionnaires, interviews, and documentation to capture both quantitative and qualitative aspects of the business. The analysis focused on three main objectives: first, to assess the costs, revenue, and income of the Sun Farm broiler business; second, to evaluate the financial feasibility using indicators such as Net Present Value (IDR 1,408,592,651), Benefit/Cost Ratio (0.187), Internal Rate of Return (20%), Return on Investment (8.9%), Break Even Point (production of 420,503 Kg for IDR 16,788/Kg), and Payback Period (3 years), all of which indicate that the business is financially viable; and third, to examine the stages of the business life cycle, where a sales growth of 11% shows that the business is currently in the growth stage. In conclusion, this study demonstrates that the Sun Farm broiler business is not only profitable but also strategically positioned for continued growth, and the chosen methods ensured reliable, in-depth insights into both its financial performance and developmental stage.

Keywords: Financial feasibility, business life cycle, broiler farming, investment analysis, growth stage

INTRODUCTION

The livestock sector is one of the most significant subsectors of agriculture in Indonesia, playing a crucial role in supporting national economic development. Beyond serving as a provider of animal protein for the population, livestock farming contributes to socio-economic empowerment by creating employment opportunities, increasing household income, and promoting sustainable agricultural development (Hafid et al., 2022). According to data from the Ministry of Home Affairs (Kemendagri), as of December 31, 2021, the agricultural and livestock sectors employed approximately 29.85 million workers, making them the third-largest source of employment in Indonesia. This figure highlights the sector's substantial contribution to the national economy and demonstrates its importance as a source of livelihood for a large portion of the population. Livestock farming is one type of business that can provide promising profits (Erdyana & Rum, 2021).

In addition to its economic benefits, the livestock subsector plays an essential role in ensuring nutritional security, particularly by providing animal-based protein to meet the daily dietary needs of most Indonesians. The growing demand for animal protein, especially broiler chicken meat, has stimulated rapid expansion in the poultry industry. Data from the (Directorate General of Livesctock and Animal Health, 2023) reveal that household per capita consumption of broiler chicken meat has steadily increased from 0.107 kg per week in 2018 to 0.137 kg per week in 2022, making broiler chicken the most consumed livestock commodity compared to beef, mutton, pork, or other meats. Broiler chicken is a type of chicken that comes from crossbreeding with chickens that have high productivity, so that broiler chickens can be harvested at the age of 4-5 weeks (Sabariah et al., 2020).

In line with this consumption trend, livestock farming is one of the strategic sectors in in the provision of animal protein food (Izzah et al., 2022). Broiler meat production has also recorded significant growth. In 2023, national broiler production reached 3.9 million tons, far exceeding other types of livestock production such as beef, goat, or pork (Direktorat Jenderal

Peternakan dan Kesehatan Hewan, 2023). Such high production figures require adequate broiler population levels to maintain supply stability. Indeed, broilers are the most populous livestock species in Indonesia, with 3.1 billion heads recorded in 2022. These figures confirm the central role of broiler farming in sustaining the availability of affordable animal protein for the population.

Mojokerto Regency, particularly the Ngoro District, an area better known as an industrial zone, also contributes to broiler production. Despite its industrial identity, livestock farming remains an integral part of the local economy. Data from BPS Kabupaten Mojokerto (2019) indicate that broiler chickens dominate the livestock population in Ngoro, totaling 137,400 heads in 2018. Nevertheless, intensive broiler farming enterprises in the district remain relatively limited due to land availability constraints and the necessity to maintain sufficient distance from residential areas to mitigate environmental impacts.

One notable enterprise in this area is Sun Farm Broiler Chicken Farm, established in 2000. In 2020, Sun Farm adopted an innovative production model by constructing a multi-level close house system with a capacity of 54,000–60,000 birds per production cycle. This innovation aimed to optimize productivity and improve efficiency in broiler management. However, establishing close house facilities requires substantial investment, financed in part through loans. In addition to capital investment, operational costs, including feed, day-old chicks (DOCs), equipment, maintenance, and biosecurity, represent significant financial commitments. Sun Farm broiler farm is a broiler poultry business located in Watesnegoro Village, Ngoro Subdistrict, Mojokerto District, East Java, Indonesia. The farm operates a closed-house system with modern cages designed to optimize broiler growth and maintain hygiene standards. The business implements an all-in, all-out production system that enables efficient management of each production cycle and minimizes the risk of disease transmission among broilers.

Sun Farm has large-scale production capacity, enabling it to meet the growing demand for poultry meat in the surrounding region. The farm is equipped with automated feeding, drinking, and ventilation systems to support optimal growth performance and animal welfare. In addition to production, the farm also emphasizes biosecurity measures, routine health monitoring, and feed quality control to ensure consistent product quality. The business is managed by a team of experienced farm managers and technicians who oversee daily operations, production planning, and financial management. Sun Farm not only contributes to local employment but also supports the regional poultry supply chain, from input suppliers to end consumers. The farm's operational strategy and infrastructure reflect a commitment to sustainable, profitable, and professional broiler farming.

Challenges in broiler farming extend beyond technical issues to include external factors that are often beyond farmers' control. One of the most pressing concerns is price volatility in the broiler market, which directly affects revenue stability. Uncertain market conditions make it difficult for farmers to predict profitability. Furthermore, feed, which accounts for the largest share of costs in broiler production, is often subject to volatile price fluctuations, thereby placing additional financial pressure on farmers. Another major risk is poultry diseases, which can significantly reduce productivity and, in severe cases, cause mass mortality, resulting in substantial economic losses. These combined factors make broiler farming a high-risk venture.

On the other hand, many broiler farmers still rely on simple profit–loss calculations without conducting comprehensive feasibility analyses. The profits that a business will obtain in the following years must be measured from the investment parameters carried by the businessman (Fikriman et al., 2021). Such an approach is insufficient to determine an enterprise's long-term viability. A rigorous financial feasibility analysis is essential not only to evaluate profitability but also to assess risk, estimate payback periods, and assess the enterprise's resilience under volatile market conditions.

As argued by Karim et al., (2022)In conducting this financial feasibility analysis, several considerations can inform decisions about a business's sustainability. It guides farmers in formulating strategies to expand operations, increase production efficiency, and allocate resources more effectively. Moreover, feasibility studies are useful for evaluating an enterprise's position within its business life cycle. The business life cycle theory states that every business has a growth pattern similar to biological growth, whereby a company's development will undergo a process from prosperity to decline (Xu et al., 2023). Identifying the current stage of the

business life cycle enables managers to adopt the most appropriate strategies to sustain competitiveness and profitability.

Sun Farm, having operated for more than two decades, is now at a critical juncture in its business life cycle. The construction of multi-level close house facilities required large-scale investment, resulting in considerable financial obligations. Without careful financial planning, debt repayment combined with market uncertainty could hinder the farm's growth trajectory. Thus, a comprehensive financial feasibility analysis is needed to assess whether the enterprise remains viable and can sustain operations over the long term. Previous studies on broiler farming have predominantly focused on technical aspects, including feed efficiency, housing management, disease prevention, and marketing strategies. While these areas are important, relatively few studies have examined financial feasibility in depth, particularly in farms that adopt multi-level close house systems. Furthermore, research on the intersection of financial feasibility and business life-cycle analysis remains limited. Yet, understanding both dimensions is crucial for assessing not only the profitability but also the long-term sustainability of broiler enterprises. To address this gap, the present study aims to analyze the financial feasibility and identify the business life cycle stage of Sun Farm Broiler Chicken Enterprise in Watesnegoro Village, Ngoro District, Mojokerto Regency.

MATERIALS AND METHODS

This study employs a case study design conducted at the broiler chicken farm *Sun Farm*, located in Krikilan Hamlet, Watesnegoro Village, Ngoro District, Mojokerto Regency. The location was purposively selected because the farm is a large-scale broiler enterprise operating under a closed-house system, with a production capacity of approximately 54,000 chickens per cycle. The research was conducted from March to July 2024, encompassing the stages of preparation, data collection, financial analysis, and assessment of the business life cycle. The study employed both primary and secondary data. Primary data were obtained through interviews with the farm owner, farm manager, and employees; direct field observations of production management; questionnaires on financial aspects; and documentation of operational activities. Secondary data were collected from official reports of the Ministry of Agriculture, scientific journals, academic books, and relevant theses. A *quantitative analysis* approach was employed, focusing on financial feasibility and business life-cycle assessment. The financial feasibility was evaluated using the following indicators:

Total Cost (TC)

$$TC=FC+VC$$

Fixed Costs (FC): Represent long-term expenses that do not fluctuate with production volume. This includes building depreciation, equipment depreciation, and annual land or property taxes. The unit is expressed in Rupiah per year (IDR/year).

Variable Costs (VC): Represent short-term expenses that change according to production output. This includes feed, day-old chicks (DOC), vaccines, medicines, vitamins, labor, electricity, and water. The unit is IDR/year.

Total Cost (TC): The sum of FC and VC, also expressed in IDR/year.

Interpretation: TC measures the total annual expenditure required to maintain farm operations.

Total Revenue (TR)

$$TR=P\times Q$$

P (Price per unit): The average selling price per chicken, expressed in IDR/unit.

Q (Quantity): The total number of chickens sold annually, expressed in units/year.

TR (Total Revenue): Calculated as the multiplication of price and quantity, expressed in IDR/year.

Interpretation: TR indicates the gross income generated from broiler sales before deducting production costs.

Profit (π)

$$\pi=TR-TC$$

TR (Total Revenue): Measured in IDR/year.

TC (Total Cost): Measured in IDR/year.

π (Profit): The difference between TR and TC, expressed in IDR/year.

Interpretation: A positive π indicates financial gain, while a negative π indicates loss.

Net Present Value (NPV)

$$NPV = \sum \frac{(B_t - C_t)}{(1+i)^t} - PVI$$

B_t (Benefit at year t): Revenue in year *t*, expressed in IDR/year.

C_t (Cost at year t): Total expenditure in year *t*, expressed in IDR/year.

i (Discount rate): Percentage (%) reflecting the time value of money.
t (Project year): Measured in years.
PVI (Present Value of Investment): Initial investment at present value, expressed in IDR.
Interpretation: NPV > 0 = feasible project; NPV < 0 = infeasible project.

Benefit–Cost Ratio (B/C Ratio)

$$B/C = \frac{Total\ Benefit}{Total\ Cost}$$

Total Benefit: Accumulated revenue (IDR).
Total Cost: Accumulated expenditure (IDR).
Interpretation: B/C > 1 = profitable, B/C = 1 = break-even, B/C < 1 = loss.

Internal Rate of Return (IRR)

$$IRR = I_1 + \frac{NPV_1}{(NPV_1 - NPV_2)} \times (I_2 - I_1)$$

I_1, I_2 (Discount rates): Expressed in %.
NPV_1: Positive Net Present Value at discount rate I_1, expressed in IDR.
NPV_2: Negative Net Present Value at discount rate I_2, expressed in IDR.
Interpretation: IRR represents the discount rate where NPV = 0. If the IRR exceeds the market interest rate, the project is feasible.

Return on Investment (ROI)

$$ROI = \frac{TR - Investment}{Investment} \times 100\%$$

TR (Total Revenue): IDR/year.
Investment: Initial capital expenditure, expressed in IDR.
ROI: Result expressed in percentage (%).
Interpretation: ROI reflects the percentage return relative to the invested capital.

Break-Even Point (BEP)
Production:

$$BEP(Q) = \frac{TC}{P}$$

TC: IDR/year.
P: IDR/unit.
BEP(Q): Number of chickens (units) required to reach break-even.
Price:

$$BEP(P) = \frac{TC}{Q}$$

Q: Units/year.
BEP(P): Minimum selling price per chicken in IDR/unit.
Interpretation: BEP helps identify the sales threshold required to cover all costs.

Payback Period (PBP)

$$PBP = \frac{Initial\ Investment}{Annual\ Net\ Cash\ Inflow}$$

Initial investment, expressed in IDR.
Annual Net Cash In Flow, expressed in IDR.
PBP: Expressed in years.
Interpretation: PBP shows the duration required to recover the initial investment.

Sales Growth

$$Sales\ Growth = \frac{Sales_t - Sales_{t-1}}{Sales_{t-1}}$$

Sales_t: Current year sales (IDR/year).
Sales_{t-1}: Previous year sales (IDR/year).
Growth: Expressed in percentage (%).
Interpretation: Growth illustrates the enterprise's position in the business life cycle (start-up, growth, maturity, or decline).

RESULTS AND DISCUSSION

Cost Analysis of Sun Farm Broiler Farm

Business activities carried out by Sun Farm broiler farms cannot be separated from the provision of operational costs. There are two types of costs in this analysis: fixed and variable. The amount of fixed costs will always remain constant throughout the production cycle. And there are variable costs that may vary depending on the duration of the operational activities (Saputra et al., 2020). Costs are the basis for determining production prices. If the product's selling price is lower than its costs, a loss will occur. The details of production costs of the Sun Farm broiler farming business from 2020–2023 are presented in the following table. Table 1 presents a detailed overview of the production costs incurred by Sun Farm broiler farm during the period 2020–2023. In general, costs are divided into two categories: fixed and variable. Within the fixed cost category, three main components are identified: taxes, cage depreciation, and equipment depreciation.

Tabel 1. Production Costs of Sun Farm Broiler Farm

Type of Cost	Year				Total
	2020 (IDR)	2021 (IDR)	2022 (IDR)	2023 (IDR)	(IDR)
Fixed Cost					
Tax	6,000,000	6,000,000	6,000,000	6,000,000	24,000,000
Cage Depreciation	2,879,434	5,758,869	8,638,302	11,517,737	28,794,342
Equipment Depreciation	24,314,620	48,629,240	73,156,860	97,258,480	243,359,200
Variable Cost					
DOC	1,391,538,000	1,965,600,000	1,628,100,000	1,767,960,000	6,753,198,000
Fodder	4,364,190,000	6,319,215,000	6,482,955,000	7,032,790,000	24,199,150,000
Medicine/Vitamins	11,986,500	24,897,000	47,196,000	69,517,500	153,597,000
Water	3,232,000	4,352,000	6,690,000	5,340,000	19,614,000
Electricity	73,793,663	100,087,280	115,667,996	131,567,842	421,116,781
Other Expenses	105,950,900	114,672,000	153,313,335	214,647,000	588,583,235
Labor Wages	238,500,000	238,500,000	238,500,000	238,500,000	954,000,000
Transportation	22,500,000	22,500,000	22,500,000	22,500,000	90,000,000
Total	6,244,885,117	8,850,211,389	8,782,717,493	9,597,598,559	**33,475,412,558**
Average Cost	567,716,829	804,564,672	798,428,863	872,508,960	**8,368,853,140**

Source: Primary Data Analysis, 2024

The tax expense is constant at IDR 6,000,000 per year throughout the research period. This stability is due to the tax being derived from the Land and Building Tax, determined by the local government, based on the one-hectare land area and the building's function as a broiler house. In contrast, cage depreciation and equipment depreciation display annual variations. The cage depreciation increased from IDR 2,879,434 in 2020 to IDR 11,517,737 in 2023, reflecting the allocation of the building's cost over its estimated 20-year economic life using the straight-line depreciation method. Equipment depreciation also rose significantly, from IDR 24,314,620 in 2020 to IDR 97,258,480 in 2023. This increase is attributable to the equipment's shorter 10-year economic life, which includes automatic feeders, nipple drinkers, blower fans, heaters, temperature sensors, and digital controllers. These items are constructed from durable materials such as stainless steel, PVC, and high-quality plastics; however, due to their intensive use and technological complexity, they depreciate more rapidly than the cage structure.

In terms of variable costs, the most significant expenditure was for broiler feed (fodder), which amounted to IDR 7,032,790,000 in 2023. The high feed cost reflects both the large broiler population (18,000 birds per floor) and the fluctuating market prices of feed ingredients. The cost of DOC (Day Old Chicks) is also substantial, amounting to IDR 1,767,960,000 in 2023, as it represents the initial input for each production cycle. Other variable costs include medicines/vitamins, water, electricity, and miscellaneous expenses. Although relatively minor in value, these costs are essential for maintaining flock health and ensuring production continuity. Labor wages, however, remain constant at IDR 238,500,000 per year throughout the period because the number of workers and the wage system remain unchanged.

Overall, the total production cost increased from IDR 6,244,885,117 in 2020 to IDR 9,597,598,559 in 2023. Similarly, the average annual cost rose from IDR 567,716,829 in 2020 to IDR 872,508,960 in 2023. This upward trend indicates that business expansion, combined with market price fluctuations in primary inputs such as feed and DOC, contributed to the sustained increase in production expenses.

Table 2 provides a more detailed description of the fixed cost components, consisting of cage depreciation, equipment depreciation, and taxes. Cage depreciation is calculated based on an estimated 20-year economic life. The close house, measuring 12 × 124 meters on a 1-hectare site, is constructed with mild-steel frames, zincalume roofing, concrete flooring, and insulated sandwich panels. These materials are designed to ensure durability, stability, and temperature efficiency. Accordingly, the annual depreciation cost ranges from IDR 2,879,434 in 2020 to IDR 11,517,737 in 2023, depending on the depreciation schedule applied.

Table 2. Fixed Costs of Sun Farm Broiler Farm (2020–2023)

Fixed Cost Component	Material/Description	Economic Life	Annual Value (IDR)
Cage Depreciation	Mild steel frame, zincalume roof, concrete floor, insulated wall	20 years	2,879,434 – 11,517,737
Equipment Depreciation	Stainless steel, PVC, durable plastic (feeders, drinkers, fans, heaters, sensors)	10 years	24,314,620 – 97,258,480
Tax	Land & Building Tax (PBB) for 1 hectare close to a house farm	–	6,000,000 (constant)

Source: Primary Data Analysis, 2024

Equipment depreciation is calculated over a shorter 10-year economic life. The equipment includes advanced systems such as automatic feeders, nipple drinkers, blower fans, heaters, and digital temperature sensors. These are primarily manufactured from stainless steel, PVC, and high-durability plastics. Because the initial investment in equipment is relatively high and their role in supporting broiler production is crucial, the annual depreciation is also higher than that for cages. The recorded yearly depreciation increased from IDR 24,314,620 in 2020 to IDR 97,258,480 in 2023.

The final component, taxes, is set at IDR 6,000,000 per year for the study period. This amount is constant because it is determined by local government regulations for the Land and Building Tax (PBB), which were not revised between 2020 and 2023. Nevertheless, in practice, tax values may be subject to adjustment in response to government policies and the revaluation of land and building assets. Taken together, the fixed cost components illustrate that these expenses are relatively stable and predictable over time, in contrast to the more fluctuating nature of variable costs. A clear understanding of the fixed-cost structure is therefore critical for long-term financial planning and for ensuring the farm's ability to withstand input price volatility.

Revenue Analysis of Sun Farm Boiler Farm

The revenue obtained from the trading business of native chicken is all revenue from the sale of chicken as a whole (Sugiarti et al., 2024). The details of production costs of the Sun Farm broiler farming business from 2020–2023 are presented in the following table 3.

Based on Table 3, Revenue of Sun Farm Broiler Farm, the highest revenue was recorded in 2023, amounting to IDR 11,161,711,548. This peak in revenue is primarily attributable to a substantial increase in broiler production, which reached 529,374 kg in 2023, exceeding levels in previous years (2022: 521,328 kg; 2021: 500,410 kg; 2020: 442,948 kg). The elevated production levels were likely driven by several factors, including improved management practices that enhanced broiler survival, the effective use of the close-house system, which ensures optimal temperature, ventilation, and overall flock health, and possibly an increased number of production cycles per year. Although the average selling price per kilogram in 2023 decreased slightly to IDR 21,174 from IDR 21,258 in 2022, it remained significantly higher than in 2020 and 2021 (IDR 18,594 and IDR 18,580, respectively). Consequently, the combination of the highest production and relatively high selling prices resulted in the maximum revenue observed during the study period.

Table 3. Revenue of Sun Farm Broiler Farm

Year	Production (Kg)	Average Price (IDR)	Revenue (IDR)
2020	442,948	18,594	8,232,815,968
2021	500,410	18,580	9,337,399,000
2022	521,328	21,258	10,998,801,615
2023	529,374	21,174	11,161,711,548
Total	1,994,060	79,606	39,730,728,131
Avarage	498,515	19,902	9,932,682,033

Source: Primary Data Analysis, 2024

This finding underscores that revenue growth in the Sun Farm broiler business is more influenced by production efficiency and scale rather than minor fluctuations in market prices. Sun Farm's broiler farm business revenue is derived solely from the sale of broilers, with the selling price per kilogram multiplied by the total weight of broiler production in each harvest period. The highest broiler farm business revenue was in 2023, amounting to IDR 11.161.711.548, while the total revenue over the four years was IDR 39.730.728.131. The revenue received by farmers will always vary due to fluctuations in market selling prices and production levels. If examined in detail, the increase in revenue in 2023 was not solely due to the selling price of broilers, since the average selling price per kilogram (IDR 21.174) was slightly lower compared to 2022 (IDR 21.258). Instead, the revenue increase was primarily attributable to higher production in 2023, which reached 529.374 kg, the highest production volume during the four-year observation period. This indicates that production performance had a greater impact than the price factor in determining revenue in 2023.

Meanwhile, the relatively large year-to-year production gap can be explained by several factors. In the early years (2020–2021), production remained below optimal capacity due to the adjustment phase in farm management and the effects of flock mortality. In 2022, production increased alongside improvements in feed quality and maintenance systems, although mortality and fluctuating harvest cycles continued to affect consistency. Finally, in 2023, production reached its highest level as the farm reduced mortality rates, optimized the number of rearing periods per year, and stabilized management practices. Thus, the increase in revenue in 2023 resulted from improved production management rather than from annual price fluctuations alone. This condition indicates that production stability and mortality control are critical determinants of the farm's long-term revenue growth, alongside market price dynamics.

Income Analysis of Sun Farm Broiler Farm

Based on Table 4, it can be observed that the income of Sun Farm broiler farm fluctuated over the period 2020–2023. In 2020, the farm generated an income of IDR 1,987,930,851, with total revenue amounting to IDR 8,232,815,968 and production costs of IDR 6,244,885,117. This indicates a relatively favorable starting point, as net income remained high. In contrast, in 2021 the farm experienced a significant decline in revenue, recording only IDR 487,187,611. This was mainly due to the impact of the COVID-19 pandemic, during which production and distribution activities were disrupted. The prices of production inputs, such as feed and veterinary supplies, increased, whereas the selling price of broilers remained unstable. Consequently, the profit margin dropped substantially in that year.

The situation improved in 2022, when the farm achieved the highest income during the study period, reaching IDR 2,216,084,122. This improvement was supported by the recovery of production and market demand, as well as a more stable supply chain in the post-pandemic period. In addition, the farm optimized cost management, thereby increasing the profit margin. In 2023, although total revenue increased to IDR 11,161,711,548, the net income decreased to IDR 1,564,112,989. This was mainly due to a sharp increase in production costs, which rose to IDR 9,597,598,559. The growth in expenses was strongly influenced by increasing feed and other production inputs, which constitute the most significant expenditure component in broiler farming. Overall, over the four years 2020–2023, the farm generated total revenue of IDR 39,730,728,131 and total costs of IDR 33,475,412,558, resulting in a cumulative income of IDR 6,255,315,573. On average, the farm earned an annual income of IDR 1,563,828,893, indicating that Sun Farm's broiler farming business is financially viable despite income fluctuations driven by both external and internal factors.

Table 4. Income of Sun Farm Broiler Farm

Year	Revenue (IDR)	Total Cost (IDR)	Income (IDR)
2020	8,232,815,968	6,244,885,117	1,987,930,851
2021	9,337,399,000	8,850,211,389	487,187,611
2022	10,998,801,615	8,782,717,493	2,216,084,122
2023	11,161,711,548	9,597,598,559	1,564,112,989
Total	39,730,728,131	33,475,412,558	6,255,315,573
Avarage	9,932,682,033	8,368,853,140	1,563,828,893

Source: Primary Data Analysis, 2024

Financial Feasibility Analysis

Table 5. Cumulative Net Cashflow

Year	Cash In (IDR)	Cash Out (IDR)	*Netcashflow* (IDR)	Cumulative Netcashflow
0		-4,000,000,000		-4,000,000,000
1	8,232,815,968	6,244,885,117	1,987,930,851	-2,012,069,149
2	9,337,399,000	8,850,211,389	487,187,611	-1,524,881,538
3	10,998,801,615	8,782,717,493	2,216,084,122	691,202,584
4	11,161,711,548	9,597,598,559	1,564,112,989	2,255,315,573

Source: Primary Data Analysis, 2024

Table 5 presents the cumulative net cash flow analysis over four years. In the initial year (Year 0), the project incurred a substantial capital outflow of IDR 4,000,000,000, resulting in a negative cumulative net cash flow of the same amount. In Year 1, the business generated a cash inflow of IDR 8,232,815,968 and an outflow of IDR 6,244,885,117, resulting in a positive net cash flow of IDR 1,987,930,851. However, the cumulative net cash flow remained negative at IDR –2,012,069,149 due to the significant initial investment. In Year 2, cash inflows increased to IDR 9,337,399,000; however, higher operating costs of IDR 8,850,211,389 reduced net cash flow to IDR 487,187,611. Consequently, the cumulative net cash flow improved but was still in deficit at IDR –1,524,881,538. By Year 3, the project performance strengthened considerably, with cash inflows reaching IDR 10,998,801,615 and expenditures of IDR 8,782,717,493. This resulted in a net cash inflow of IDR 2,216,084,122, shifting the cumulative net cash flow into a positive balance of IDR 691,202,584. Finally, in Year 4, the business remained profitable, recording cash inflows of IDR 11,161,711,548 and outflows of IDR 9,597,598,559, resulting in a net cash inflow of IDR 1,564,112,989. The cumulative net cash flow rose significantly to IDR 2,255,315,573, indicating that the project not only recovered its initial investment but also achieved a favorable financial position within four years.

Table 6 presents the results of the financial feasibility analysis for the broiler farming business. The Net Present Value (NPV) was calculated at IDR 1,408,592,651, which is positive, indicating that the company generates positive returns over its investment horizon. The Benefit-Cost (B/C) Ratio reached 0.187%, exceeding the minimum threshold of zero, thereby confirming the business's ability to generate net benefits relative to costs. Furthermore, the Internal Rate of Return (IRR) was 20%, significantly higher than the assumed discount rate of 6%, indicating strong financial performance and profitability. The Return on Investment (ROI) was 8.9%, which, although slightly below the expected benchmark range of 10–15%, remains feasible given the business's overall profitability.

In terms of risk evaluation, the Break-Even Point (BEP) for production was 420,503 kg, which is below the total production capacity of 498,515 kg, indicating that the business can cover its costs within its production scale. Similarly, the BEP price of IDR 16,788 per kilogram was below the prevailing market price of IDR 19,902, indicating favorable pricing margins. Lastly, the Payback Period was estimated at 3 years, which is shorter than the assets' economic lifetimes, further strengthening the project's feasibility. Overall, based on all the financial indicators, the broiler farming business is considered financially feasible and sustainable.

Table 6. Financial Feasibility Analysis

Criteria	Unit	Value	Limitation	Decision
NPV	IDR	1,408,592,651	> 0	feasible
B/C Ratio	%	0.187%	> 0	feasible
IRR	%	20%	> 6%	feasible
ROI	%	8.9 %	10 – 15%	feasible
BEP Production	Kg	420,503	< 498,515	feasible
BEP Price	IDR	16,788	< 19,902	feasible
Payback Period	Year	3	< lifetime asset	feasible

Source : Primary Data Analysis, 2024

Net Present Value (NPV)

Table 7. Net Cashflow

Years	*Net Cashflow* (IDR)	DF (6%)	PV (IDR)
0	(4,000,000,000)	1	(4,000,000,000)
1	1,987,930,851	0.943	1,875,406,463
2	487,187,611	0.889	433,595,239
3	2,216,084,122	0.839	1,860,666,962
4	1,564,112,989	0.792	1,238,923,987
NPV			1,408,592,651

Source: Primary Data Analysis, 2024

The Net Present Value (NPV) calculation in Table 7 uses a discount factor (DF) of 6% per year. The basis for determining the 6% DF is the prevailing interest rate of Bank Rakyat Indonesia (BRI) for investment credit facilities in 2023. In financial feasibility studies, the discount factor is generally determined by considering the cost of capital, the opportunity cost of funds, or the interest rates offered by financial institutions. In this case, the use of BRI's investment credit rate at 6% is justified, as it reflects the actual financing cost that the Sun Farm broiler business would face if it relied on external funding through bank loans.

The application of the 6% DF allows future cash inflows to be converted into their present values, thus providing a more accurate measure of profitability by accounting for the time value of money. The positive NPV of IDR 1,408,592,651 indicates that the present value of cash inflows (IDR 5,408,592,651) exceeds the initial investment cost (IDR 4,000,000,000). This finding confirms that the project is financially feasible because its NPV is positive. The reference to the BRI investment credit rate is appropriate, provided that the business indeed intends to use BRI financing as the benchmark for capital costs. However, in practice, the DF may also be determined using alternative methods such as the Weighted Average Cost of Capital (WACC) or social discount rates, depending on the study's purpose. Nonetheless, aligning the DF with the BRI interest rate at 6% remains a valid and reliable approach, as it reflects the real financing environment in 2023. This conclusion is consistent with (Purba et al., 2023), who also demonstrated that a positive NPV value (IDR 1,385,329,471) indicated the financial feasibility of broiler farming in Tapak Meriah Village, Silinda District, Serdang Bedagai Regency.

Benefit Cost Ratio (B/C Ratio)

The results of the calculation indicate that the Benefit-Cost Ratio (B/C Ratio) of the Sun Farm broiler business is 0.187, obtained from dividing the total average revenue of IDR 1,563,828,893 by the total average cost of IDR 8,368,853,140.

$$\text{B/C Ratio} = \frac{Benefit}{Total\ Cost}$$

$$\text{B/C Ratio} = \frac{1.563.828.893}{8.368.853.140}$$

B/C Ratio = 0,187

This ratio, which is greater than zero, indicates that the business remains financially feasible. In practical terms, the value implies that every IDR 1.00 invested in the production process generates a return of IDR 0.187. Although the ratio is below the ideal benchmark of 1, indicating that benefits outweigh costs, the positive value nonetheless suggests that the farm continues to generate revenue relative to its expenditures. This result highlights both the potential profitability and the need for efficiency improvements in cost management to enhance the overall feasibility of the broiler farming business.

The Benefit-Cost Ratio (B/C Ratio) of the Sun Farm broiler business was calculated as 0.187, obtained by dividing the total average revenue of IDR 1,563,828,893 by the total average cost of IDR 8,368,853,140. This ratio is notably lower than those reported in similar studies. For instance, a study published in the *Bulletin of Animal Science* reported a B/C ratio of 1.24 for a closed-house broiler farm with a partnership business model. Additionally, research by Qamara (2025) indicated a B/C ratio of 0.039 for cage systems and 0.05 for postal systems in broiler farming. Although the Sun Farm's B/C ratio is greater than zero, indicating that the business generates revenue relative to its expenditures, it falls significantly below the benchmark of 1. This suggests that, for every IDR 1.00 invested in production, only IDR 0.187 is returned, which is considerably lower than typical returns observed

in similar close-house broiler operations. The discrepancy may be attributed to factors such as higher operational costs, inefficiencies in feed and disease management, challenges in disease management, or suboptimal production practices. In conclusion, while the favorable B/C ratio indicates that the Sun Farm operation is not incurring losses, comparisons with the literature underscore the need for strategic cost optimization and productivity improvements. Measures such as improving feed conversion efficiency, reducing mortality rates, and optimizing labor and equipment utilization could help raise the farm's B/C ratio toward industry standards, thereby improving financial feasibility and competitiveness.

Internal Rate of Return (IRR)

According to Adnyana (2020)The internal Rate of Return (IRR) is an internal rate method used to assess the feasibility of a business by extending the present value method. It is a calculation in which the percentage of the discount factor that yields a negative NPV for the Sun Farm broiler business is equal to 100%. From several trials and errors to find a discount factor value that produces a negative NPV, the results of the financial feasibility analysis of the Sun Farm broiler farming business for the (IRR) criteria show a value of 20%. It can be concluded that the Sun Farm broiler farm business provides a profit rate of 20%, or the profit rate obtained is greater than the prevailing interest rate determined at 6%. Thus, the Sun Farm broiler farming business is financially feasible. As in the research conducted by Pandey et al., 2022**,** who calculated the feasibility of the broiler business in Pinaras Village, Tomohon Selatan Subdistrict, obtained an IRR of 45.29% and declared it feasible.

Return On Investment (ROI)

$$\text{ROI} = \frac{Total\ Revenue - Investment}{Investment} \text{ x } 100\%$$

$$\text{ROI} = \frac{39.730.728.131 - 4.000.000.000}{4.000.000.000} \text{ X } 100\%$$

$$\text{ROI} = 8{,}9\ \%$$

The results above show that the ROI of the Sun Farm broiler farming business was 8,9%. When viewed through the criteria used to assess ROI, this value falls within the 6-9% range, indicating profitability. This suggests that the Sun Farm broiler farming business is feasible, as it can yield sustainable profits for farmers. ROI is used to measure the efficiency of operational activities carried out by each sub-unit by allocating all costs and capital spent by the relevant sub-unit (Arif et al., 2023).

Break-Even Point (BEP)

$$\text{BEP of Production} = \frac{\text{Total Cost}}{\text{Selling Price}}$$

$$\text{BEP of Production} = \frac{8.368.853.140}{19.902}$$

$$\text{BEP of Production} = 420.503 \text{ Kg}$$

This indicates that Sun Farm broiler farm must produce at least 420,503 kilograms of broilers to reach the break-even point. By comparison, the farm's actual average production is 498,515 kilograms, substantially exceeding the BEP level. This surplus in production demonstrates that the farm is not only capable of covering all costs but also of generating a profit margin. Thus, the business is financially feasible from a production perspective.

$$\text{BEP of Price} = \frac{\text{Total Cost}}{\text{Quantity}}$$

$$\text{BEP of Price} = \frac{8.368.853.140}{498.515}$$

$$\text{BEP of Price} = \text{IDR } 16.788/\text{Kg}$$

This means that, to cover the full production cost, the minimum selling price required is IDR 16,788 per kilogram. The average selling price of broilers at Sun Farm is IDR 19,902 per kilogram, which is significantly higher than the break-even price. This positive margin between the actual selling price and the BEP price confirms that the business is operating profitably and is economically viable.

Payback Period (PBP)

$$PBP = \frac{Initial\ Investment}{Annual\ Net\ Cash\ Inflow}$$

This formula assumes that cash inflows are constant over time and provides a quick estimate of the time required to recover the initial investment. Unlike the interpolation method, which analyzes cumulative cash flows to pinpoint the exact year when the investment turns positive, this approach offers a straightforward calculation by dividing the total investment by the average annual return. For the Sun Farm broiler farm, with an initial investment of IDR 4,000,000,000 and an

annual net cash inflow of IDR 1,563,828,893, the payback period is:

$$PBP = \frac{4,000,000,000}{1,563,828,893} = 2,6\ years$$

This duration is shorter than the asset's 30-year useful life, indicating that the project can recover its investment quickly and is financially feasible. While the interpolation method is more precise for uneven cash flows, the simple ratio formula provides an efficient alternative for projects with stable returns. Using this method with an initial investment of IDR 4,000,000,000 and an annual net cash inflow of IDR 1,563,828,893, the payback period is calculated to be 2.6 years. The result was rounded to 3 years, consistent with the farmer's statement. He completed the investment repayment within 3 years, owing to the investor's grace period. This alternative approach, although less precise for uneven cash flows, provides a quick estimate of investment recovery and corroborates the findings obtained from the interpolation method. Payback Period is used to measure the period required for a business to recover the capital or investment that has been spent while business (Saragih et al., 2022). Overall, both approaches demonstrate that the Sun Farm broiler farm can return the invested capital within a short timeframe relative to the assets' economic life. This suggests that the business is financially viable and that the investment is acceptable. The consistent results across both methods reinforce the reliability of the payback period as an indicator of the project's financial feasibility.

Business Life Cycle Stage Analysis

Business Life Cycle analysis in this study was conducted by calculating sales growth for the Sun Farm broiler farming business. The following Business Life Cycle analysis was carried out on the Sun Farm broiler farm business:

Table 8. Business Life Cycle Analysis

Year	Sales	Sales Growth	Persentage
2020	8,231,815,968		
2021	9,337,339,000	0.134	13%
2022	10,998,801,615	0.178	18%
2023	11,161,711,548	0.015	1.5%
Sales Growth Average			11%

Source : Primary Data Analysis, 2024

In this study, the Business Life Cycle (BLC) of the Sun Farm broiler business was analyzed by examining sales growth from 2020 to 2023. Sales growth is an essential indicator of a business's position within its life cycle, reflecting market acceptance, operational efficiency, and profit potential. In addition, to determine the extent of the company's sales growth, thereby enabling the prediction of profits or gains (Yuliani, 2021). The sales data for Sun Farm show that the business recorded sales of IDR 8,231,815,968 in 2020, which increased to IDR 9,337,339,000 in 2021, representing a 13% increase. In 2022, sales further rose to IDR 10,998,801,615, representing an 18% increase, the highest during the observed period. However, in 2023, sales reached IDR 11,161,711,548, reflecting a significant slowdown in sales growth to only 1.5%.

The decrease in the growth rate in 2023 can be attributed primarily to higher production costs, which reduced overall income despite a slight increase in sales. These fluctuations in sales growth indicate that, although the business had previously experienced robust expansion, operational challenges, including cost management, have begun to affect profit margins. Despite this slowdown, average annual sales growth over the four years was 11%, indicating that the Sun Farm broiler business remains in the Growth stage of the Business Life Cycle. Being in the Growth stage suggests that the company has achieved market acceptance and can generate substantial profits. This stage is typically characterized by increasing demand, opportunities to expand the customer base, and the potential to scale operations. For Sun Farm, this implies that the company is well-positioned to expand its distribution network further, optimize production efficiency, and implement strategies to maximize sales potential. Maintaining growth during this stage requires careful management of production costs, market strategies, and supply chain logistics to sustain profitability and competitiveness in the broiler farming industry. In conclusion, the Business Life Cycle analysis indicates that Sun Farm's broiler operation has transitioned from the early stages of market entry into a growth phase,

in which strategic expansion and cost management are critical to sustaining sales growth and long-term viability. The insights from this analysis provide a basis for decision-making regarding investment, marketing, and operational improvements to ensure continued success.

CONCLUSION

Based on the findings of this study, it can be concluded that Sun Farm's broiler farming business, which has operated under a close-house system since 2020, has consistently generated profits through 2023. The revenue from broiler sales each year exceeded total production costs, indicating that the business incurred no losses and generated significant income. From the perspective of financial feasibility, the business is declared feasible as indicated by positive economic indicators, including a positive NPV, a B/C ratio greater than one, an IRR exceeding the prevailing interest rate, a profitable ROI, a production BEP lower than the actual production, a price BEP lower than the selling price, and a Payback Period shorter than the asset's useful life. Furthermore, based on the Business Life Cycle analysis, the average sales growth of 11% places Sun Farm at the Growth stage, highlighting opportunities for further development and expansion. In line with these conclusions, it is recommended that Sun Farm continue to enhance and expand its broiler farming business by optimizing additional revenue streams, such as the use of chicken manure and mortalities to produce economically valuable products. Given that the business is currently in the Growth stage, Sun Farm should capitalize on this momentum to attract investors and broaden its market reach, thereby enhancing competitiveness. Moreover, government support is essential, particularly through policies that stabilize both production inputs and broiler meat prices. Such policies are crucial for helping farmers balance operational costs with revenues, thereby ensuring the long-term sustainability of the business despite market price fluctuations.

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