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Integration of financial feasibility analysis and performance index in medium-scale semi-closed house broiler chicken businesses

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ABSTRACT

The development of semi-closed housing systems has become an alternative transition between open and fully closed housing in medium-scale broiler chicken production. However, empirical studies integrating technical performance and financial feasibility of this system are still limited. This study aims to analyse the feasibility of broiler chicken farming using the semi-closed house system through an integrated approach between financial analysis and Performance Index (PI) in one production period. The study was conducted at the Lancar Jaya Farm in Malang Regency, with a population of 6,900 broiler chickens. Quantitative data, including fixed costs, variable costs, revenue, and production performance parameters, were analyzed descriptively using profit indicators, the R/C ratio, BEP, and PI. The results showed that the business generated a profit of IDR 27,178,137 per production period, with an R/C ratio of 1.1 and a PI of 359, which are above the national standard. These findings indicate that the semi-closed house system is capable of achieving efficient technical and financial performance on medium-scale farms. This study provides empirical contributions as a reference for farmers' decision-making in optimizing broiler chicken housing systems and production management.

Keywords: broiler chickens; semi-closed housing; business feasibility; performance index; financial analysis.

1. INTRODUCTION

Broiler chickens have economic prospects (Simanjuntak et al., 2018). Due to the increasing demand for animal protein, chicken consumption in Indonesia is rising. Factors influencing broiler meat consumption include the lifestyle of rural communities, who choose broiler meat because of its accessibility and lower price compared to other types of meat. Broiler meat is white meat with low cholesterol content, making it suitable for many people to consume; and consumption levels. Broiler chickens are a superior breed resulting from crossbreeding between chicken breeds with high productivity, especially in producing chicken meat. Broiler chickens are a type of chicken resulting from crossbreeding of highly productive chicken breeds, especially for chicken meat production. They grow quickly and can reach a weight of 1.2–1.9 kg in a relatively short time at four–five weeks of age (Woro et al., 2019). Seed quality, feed type and quality, and management are some of the factors that influence the results of broiler chicken farming. Management factors are greatly influenced by the quality of poultry house management. Broiler chicken houses are important in intensive farming. Broiler chicken housing can be divided into closed and open housing based on the type of walls (ventilation) (Nuryati, 2019). Closed housing in broiler chicken farming is one of the efforts to achieve a comfortable environment, healthy air, and minimal stress. However, with developments, semi-closed houses have also been built. Open houses usually have open walls and are made of wood or of bamboo. Closed pens usually have walls made of high-tech permanent materials that provide good ventilation, thereby reducing the impact of high humidity. However, semi-closed pens follow the principles of closed houses. They are similar in shape to open houses, with non-permanent walls made of curtains or tarpaulins, a ceiling above, and exhaust fans that remove oxygen and carbon dioxide. The profitability of broiler chicken farms using open and closed house systems was determined using profit analysis and the R/C ratio to determine the efficiency. He found that the open house system generated greater profits. The profitability of broiler chicken farms using open and closed house systems is determined using profit analysis and the R/C ratio to assess efficiency. He found that the open house system generated greater profits (Viastika, 2021). This shows that with good housing support, the success rate of broiler chicken farming will be higher, which will also affect the amount of profit obtained after carrying out the broiler chicken farming business. In any business, including broiler chicken farming, profit is the goal to be achieved (Simanjuntak et al., 2018). To achieve the highest possible profit in a farming business, particularly broiler chicken farming, it is essential to consider production factors such as breeding, feed, and management practices. Additionally, farmers must be able to analyze the income and expenditure of the business to determine the profitability of the broiler chicken farming operation being conducted. Furthermore, as evaluation material, it is also necessary to analyze the feasibility of the business and the level of broiler chicken performance achieved during a production period, because broiler chicken farming has appeal as a business to be run in the future. Therefore, this topic requires further investigation.

Although the feasibility analysis of broiler chicken businesses has been conducted extensively, most studies still focus on comparing open and closed house systems or large-scale industries. Studies that specifically evaluate the integration of technical and financial performance in semi-closed house systems, especially on medium-scale farms, are still relatively limited. In fact, the semi-closed house system is a realistic choice for farmers facing capital constraints and the need to increase production efficiency. Therefore, this study is novel in that it integrates financial feasibility analysis and Performance Index (PI) as a comprehensive evaluation tool for semi-closed house broiler chicken businesses in a single production period.

The novelty of this study lies in its approach to evaluating semi-closed house broiler chicken farming systems, which integrates financial feasibility analysis and technical production performance within a single maintenance period on a medium-scale farm. Unlike previous studies, which generally discuss open and closed house systems separately or focus solely on financial aspects, this study combines economic indicators (profit, R/C ratio, B/C ratio, and break-even point) with a performance index (PI) as a comprehensive technical measure. This integrated approach provides a more complete empirical picture of the efficiency, productivity, and feasibility of semi-closed house broiler chicken farming, while

also producing relevant performance benchmarks for farmers in the transition process towards a more modern and sustainable housing system.

2. METHOD

2.1. Research Location

This study was conducted at the Lancar Jaya Farm, located in Banu Hamlet, RT. 13 RW.02, Banturejo Village, Ngantang District, Malang Regency, for five months from September to January 2022. This farm was chosen based on the suitability of the location, ease of transport access, availability of equipment, and maintenance management system in place.

2.2. Data Collection Methods

Data was collected through observation, which means that the researcher observed the research location directly and the actions taken by farmers during broiler farming. The observation method was also supported by interviews with farmers using questionnaires (conducted in-person).

2.3. Types and Sources of Data

Primary and secondary data are sources of data used in research. Primary data comes from previous research. The data in question is quantitative data, i.e. data in the form of figures relating to revenue. The expenditure aspect also includes costs in the cultivation process, including fixed costs such as depreciation of cages and equipment, and variable costs (feed, chicken seeds, OVK, electricity, litter materials, etc.). The broiler business primarily generates income from the sale of chickens. This income can be calculated by subtracting the production costs from the chicken sales revenue (Abadi et al., 2023). Profitability is determined by the difference between total revenue and total cost (Febrianto & Putritamara, 2017). In addition to financing, the data in question also relate to broiler chicken performance, including the Feed Conversion Ratio (FCR), depletion percentage, total weight, and average final weight.

2.4. Data Analysis Techniques

Next, the data obtained is analysed descriptively to show the business conditions and characteristics of the farmers, as well as the elements that make up the production costs, receipts and income of the broiler chicken business. All costs incurred during the production process, calculated from fixed and variable costs, are referred to as total production costs. Income or profit is the difference between the farmer's revenue and total production costs. Sales are calculated by multiplying the weight of chickens sold by the price per kilogram, in accordance with the contract. The mathematical representations of revenue and income are as follows:

TC = TFC + TVC

Explanation:
TC = Total Cost (total costs per production period)
TFC = Total Fixed Cost (total fixed costs per production period)
TVC = Total Variable Cost (total variable costs per production period)

R = p x Q

Explanation:
R = Revenue (Rp per production period)
p = Production price (Rp per kilogram)
Q = Total chicken production (total weight per production period)

NR = TR – TC

Explanation:
NR = Net Revenue (net income per production period)
TR = Total Revenue (total income per production period)

Next, data analysis was conducted using cost analysis and the R/C ratio using the following formula:

TC = FC + VC

TR = Pq x Q

π = TR-TC

R/C ratio = Revenue/cost

TC is the Total Cost, TR is Total Revenue, π is the Business Profit, and R/C ratio is the ratio between Revenue and Cost.

R/C Ratio Criteria: if the R/C ratio >1, it means that the business is feasible to develop, while an R/C ratio <1 means that the business is not feasible to develop (Lole et al., 2024; Fauzi & Lestari, 2024; Fadhlurrohman et al., 2024).

To determine the performance value of the business that has been carried out, the IP (Performance Index) is calculated (Kementerian Pertanian, 2020). The IP factor is used as a reference because it is comprehensive enough to assess factors other than body weight, such as feed conversion, depletion, and maintenance period (Amam & Harsita, 2019). Mathematically, this can be described by the following formula:

IP=((100-D)xBW)/FCRxUP x100

Explanation:

IP: Performance Index

D: Depletion percentage (%)

BW: Average body weight at harvest (kg)

FCR: Feed conversion ratio

UP: Average harvest age (days).

The standard IP is 300, which is classified as good. Therefore, the higher the IP value, the more successful the broiler chicken business is considered to be.

3. RESULT AND DISCUSSION

Lancar Jaya Farm, owned by Mr. Supartono, is a relatively new broiler business in the Ngantang area. The farm was established in December 2018. At the beginning of construction, the coop was an open house type. After two broiler care periods, the owner renovated the coop into a semi-closed house with an area of 2 x 360 m2. The population maintained is 6,900 chickens. In its management, the owner works together with his son and does not employ farmhands except during harvesting or when sanitising and repairing the coop.

In the last nine periods, Lancar Jaya Farm has partnered with PT. Bintang Tama Sentosa. Before partnering with this company, the broiler business partnered with PT. Sidoagung and PT. Charoen Phokpand Indonesia. The partnership at Lancar Jaya Farm demonstrates the importance of collaboration in broiler chicken farming. Through this partnership, farmers benefit from the provision of farming production facilities and the marketing of their livestock products. The partnership model in broiler farming includes how it motivates farmers through assistance in capital, management, and marketing. The feasibility of independent farming versus partnerships found that while partnerships have higher costs, they also have a more significant average return (Walid et al., 2021; Saleh et al., 2023; Nari et al., 2024). This allows farmers to focus on farming activities. The activities carried out on this farm focus on the maintenance and fattening of broiler chickens. Maintenance and fattening begin from the starter phase until the finisher phase. See Table 1

Table 1. Production Performance and Financial Indicators of Broiler Farming

No.	Description	Field Implementation Results
1	Broiler Production Index	Harvesting was carried out at 36–40 days of rearing, resulting in three BIP values: minimum BIP, maximum BIP, and average BIP. A longer rearing period tends to reduce the BIP value. The average harvest age was 37.2 days, which was used to calculate the average BIP.
2	Broiler Performance Index	The broiler production performance index reached a value of 359, which falls into the **very good** category (above the standard).
3	Break-Even Point (BEP)	The break-even point for this production period was IDR 17,299.8.
4	Cost of Production	The cost of production was IDR 45,067.6.

Based on the analysis of business results, it can be seen that this livestock business has successfully achieved the set performance standards. This assessment is based on a fairly high IP value. These values can be obtained if the data is complete. In addition, when looking at the business results, it can be seen that during this period, farmers earned promising profits. When calculating the feasibility of the business, it can be concluded that this business is feasible to continue and that an evaluation should be conducted to optimise the production results of the poultry being raised.

The success of broiler farming significantly depends on achieving predetermined performance standards, which are evaluated through parameters such as the Break-Even Point (BEP) and IP (Siddiq & Nur, 2023). This serves as an important benchmark for assessing the efficiency and profitability of broiler farming operations.

The business analysis calculations for Lancar Jaya Farm are presented in the Table 2:

Table 2. Financial Analysis of Broiler Farming at Lancar Jaya Farm

No.	Activity	Amount (IDR)
1	**Farm Revenue**	
	Broiler Sales	274,665,200
	Performance Index (IP) Bonus	2,105,325
	Close House Incentive	1,403,550
	Total Revenue	**278,174,075**
2	**Farm Expenditure**	
	Fixed Costs	
	House Depreciation	3,333,000
	Equipment Depreciation	2,083,000
	Variable Costs	

	Feed Cost	182,658,500
	Day-Old Chick (DOC) Cost	50,370,000
	Veterinary Medicines and Vaccines (OVK)	4,552,438
	Herbal Supplements	1,000,000
	Brooding Gas	1,200,000
	Electricity	1,600,000
	Labor Cost	2,200,000
	Litter (Rice Husk)	2,000,000
	Total Cost	**250,995,938**
3	**Net Profit**	**27,178,137**
4	Break-Even Point (BEP)	17,299.8
5	Revenue–Cost Ratio (R/C Ratio)	1.1
6	Benefit–Cost Ratio (B/C Ratio)	0.1

The Break-Even Point (BEP) indicates the level of production at which total costs equal total revenue, providing a threshold for financial sustainability. IP, on the other hand, is a more comprehensive measure that integrates various factors such as feed conversion ratio, mortality rate, and growth rate to provide a holistic view of agricultural performance. Data completeness and accuracy are crucial to ensure these metrics provide a reliable reflection of agricultural operations (Siddiq & Nur, 2023). Accurate data collection involves meticulous recording of all relevant inputs and outputs, including feed consumption, chicken weight, mortality rates, and production costs. Without complete and accurate data, BEP and IP values may be skewed, leading to inaccurate assessments and potentially flawed decision-making.

A high IP value is indicative of efficient production processes and effective management practices, both of which contribute significantly to the overall profitability of broiler farms (Susan et al., 2023). An efficient production process involves optimising resource utilisation, minimising waste, and streamlining operations to reduce costs and increase output. Effective management practices encompass various aspects of farm management, including biosecurity measures, disease control protocols, and management strategies. An efficient production process involves optimising resource utilisation, minimising waste, and streamlining operations to reduce costs and increase output. Effective management practices cover various aspects of farm management, including biosecurity measures, disease control protocols, and environmental management strategies. A high IP value indicates that the farm is successful in managing these factors, resulting in healthy livestock growth, efficient feed conversion, and minimal mortality. Accurate data collection is essential for decision-making and optimising agricultural operations (Siddiq & Nur, 2023). By monitoring key performance indicators and analysing trends, farmers can identify areas for improvement and implement targeted interventions to increase efficiency and profitability. For example, if data reveals a high feed conversion ratio, farmers can investigate feed formulation, feeding practices, and poultry health to identify potential problems and implement corrective measures.

High-performing farms typically demonstrate effective cost management, optimal resource utilisation, and adherence to best practices in broiler rearing (Susan et al., 2023). Effective cost management involves careful monitoring and control of all costs, including feed costs, energy costs, labour costs, and veterinary costs. Optimal resource utilisation requires maximising output from available resources, such as land, labour, and capital, to improve efficiency and reduce waste. Adherence to best practices in broiler farming involves following established guidelines and protocols for livestock health, welfare, and environmental management. These factors collectively contribute to the financial viability and

sustainability of broiler farming enterprises (Fitri, 2024). By managing costs effectively, optimising resource utilisation, and following best practices, broiler farms can increase their profitability, reduce their environmental impact, and ensure their long-term sustainability.

Performance standards are typically evaluated using indicators such as the R/C Ratio, B/C Ratio, BEP, and Return On Investment (ROI) (Siddiq & Nur, 2023). The R/C Ratio (Revenue to Cost Ratio) and B/C Ratio (Benefit to Cost Ratio) measure agricultural profitability by comparing revenue and benefits with related costs. BEP (Break-Even Point) indicates the level of production at which total costs equal total revenue.

To assess the business, the following data must be calculated:
Final weight = ((14820.3)/6570) = 2.2 kilograms or 2200 grams
With a DOC weight of 37 grams and a price per head of Rp.7300
Therefore, the weight gain during one rearing period is 2,200 - 37 = 2,163 grams.
The total feed usage is 451 x 50 kg = 22,550 kg or 22,550,000 grams for a population of 6,900 birds, so the amount required per bird at the end of the period is 3,432 grams. The feed used is valued at 182,657,500 with a quantity of 22,550 kg, so the price per kg of feed is 8,100.

The number of deaths was 330 out of a population of 6,900, resulting in a depletion rate of 4 per cent.
Depletion = (330 x 100%) / 6,900 = 4/100 = 4%
BVK = 5,552,438 / 6,900 = 804.7 per head
Feed price per kg = 182,657,500/22,550 = 8,100
BOP = 12,416,000/6,900 = 1,799.4 per head
MF = 17,968,438/6,900 = 2,604 rupiah per head
Depreciation cost of housing = 299,970,000/15x6 = 3,333,000
Depreciation cost of equipment = 50,000,000/4x6 = 2,083,000

See Table 3 for detail.

Table 3. Feed Conversion Ratio (FCR) of Broiler Chickens

Week	Total Feed Consumption	Body Weight (g)	Number of Birds	FCR
1	22	227	6,833	0.08
2	74	575	6,782	1.01
3	170	1,105	6,73	1.18
4	297	1,597	6,659	1.42
5 (Harvest)	451	2,2	6,57	1.58

Evaluating the feasibility of broiler farming operations is crucial for determining their long-term viability, as demonstrated by studies using parameters such as the R/C ratio and B/C ratio (Siddiq & Nur, 2023). The R/C ratio (Revenue to Cost ratio) and B/C ratio (Benefit to Cost ratio) are widely used indicators for assessing the economic viability of agricultural enterprises. An R/C ratio greater than 1 indicates that the farm generates more revenue than it spends on production costs, signifying profitability. A B/C ratio greater than 1 indicates that the benefits of the farm operation exceed the costs, indicating economic viability. This ratio provides a clear and concise measure of financial performance, enabling farmers and investors to make informed decisions about the long-term sustainability of the operation. Evaluating the viability of a broiler farm operation involves a comprehensive assessment of all relevant factors, including market conditions, production costs, and efficiency.

Broiler farms that are considered viable often show positive financial indicators, such as an R/C ratio greater than 1 and a B/C ratio greater than 0, indicating that the business generates sufficient income to cover costs and provide a return on investment. The results of the study show a positive R/C of 1.1, which supports the decision to continue and expand operations. An R/C ratio greater than 1 indicates that a business is profitable and can generate a surplus after covering all production costs. A B/C ratio greater than 0 indicates that the benefits of agricultural operations are greater than the costs, indicating that agriculture is economically viable and sustainable. These positive financial indicators give confidence to farmers and investors, supporting the decision to continue and expand the business.

If feasibility calculations are carried out, it can be said that this business is viable to continue and evaluate to optimise the production of poultry that has been raised (Siddiq & Nur, 2023). These results provide a clear path forward for broiler farmers, encouraging them to continue their operations while also emphasising the importance of ongoing evaluation and optimisation.

By continuously monitoring their performance, identifying areas for improvement, and implementing best practices, broiler farmers can maximise their profitability, minimise their environmental impact, and ensure the long-term sustainability of their business.

Break-even point (BEP) analysis is crucial in broiler farming to determine the production volume and price at which the business neither makes a profit nor incurs a loss (Siddiq & Nur, 2023). BEP is a fundamental concept in business management that identifies the level of production and sales required to cover all costs. In broiler farming, BEP analysis involves calculating the number of chickens that must be sold or the price at which each chicken must be sold to avoid losses. This analysis provides farmers with a clear understanding of the minimum requirements for financial sustainability, enabling them to make informed decisions about production levels, pricing strategies, and cost management. By understanding the BEP, farmers can set realistic goals, monitor their performance, and take corrective action to ensure their operations remain profitable. The results of the study show that the Lancar Jaya Farm can produce above the BEP.

A study on broiler chicken farming reveals that production volume exceeds the break-even point (BEP), indicating profitability, while market prices are lower than the BEP price, indicating competitive pricing (Siddiq & Nur, 2023). This insight highlights the importance of efficient production and strategic pricing. The findings of this study show the interaction between production volume, market price, and profitability in broiler farming. When production volume exceeds the BEP, the farm generates profits, indicating that it is operating efficiently and effectively. However, if the market price is lower than the BEP, the farm may face challenges in achieving the desired profit margin. In this case, farmers must focus on improving their production efficiency, reducing their costs, and implementing strategic pricing strategies to remain competitive and profitable. This requires careful analysis of market conditions, cost structures, and customer demand. IP is a comprehensive parameter that reflects the overall efficiency and productivity of broiler farm operations (Susan et al., 2023). It considers factors such as feed conversion ratio (FCR), mortality rate, and growth rate to provide a holistic assessment of farm performance (Zainuddin et al., 2020; Sari et al., 2023; Anwar et al., 2020). Efficient feed management optimises metabolic processes (Rayer et al., 2023). Nutritional strategies play a crucial role in improving the quality and composition of beef in broiler production (Choi et al., 2023), further emphasising the need for a comprehensive approach to broiler nutrition. The IP serves as an integrated measure capturing the multifaceted nature of broiler farm operations. The IP obtained from Lancar Jaya Farm was 1.58 and the Performance Index was 359, above the standard. By combining key performance indicators such as FCR, mortality rate, and growth rate, the IP provides a comprehensive assessment of farm performance, enabling farmers to quickly identify areas of strength and weakness. This comprehensive approach is crucial for making informed decisions and optimising farm operations. A high IP value indicates that the farm is operating efficiently, producing healthy poultry, and maximising profitability.

Research shows that IP values can be influenced by factors such as DOC quality, feed type, housing conditions, disease prevention, and marketing strategies (Susan al., 2023). These findings underscore the importance of integrated management practices to optimise IP. The quality of day-old chicks (DOC) significantly impacts the subsequent growth and health of broilers, affecting their overall

performance. The type of feed used, including its nutritional composition and digestibility, directly affects feed conversion efficiency and growth rates. Housing conditions, such as temperature, ventilation, and lighting, play an important role in poultry welfare and productivity. Effective disease prevention strategies, including vaccination programmes and biosecurity measures, minimise mortality rates and improve overall livestock health. Marketing strategies, such as pricing, distribution, and customer service, influence revenue and profitability. By carefully managing these factors, farmers can optimise their IP and improve their overall performance.

A higher IP indicates better performance, demonstrating efficient resource utilisation, effective disease control, and optimal growth rates. The performance index (PI) is assessed based on the type of DOC, feed type, maintenance procedures, disease prevention, and marketing of production outputs (Susan et al., 2023). These factors collectively contribute to the overall efficiency and profitability of broiler farming operations. Assessing broiler types involves evaluating genetic potential, health status, and flock uniformity. Assessing feed types involves analysing nutritional composition, digestibility, and cost-effectiveness. Assessing standard operating procedures requires evaluating temperature control, ventilation, lighting, and sanitation. Assessing disease prevention strategies involves monitoring vaccination programmes, biosecurity measures, and prevention and treatment. Assessing marketing strategies involves analysing pricing, distribution, and customer service. By carefully evaluating these factors, farmers can gain a comprehensive understanding of their IP and identify potential improvements.

4. CONCLUSION

This study concludes that Mr. Supartono's broiler chicken farm, with a scale of 6,900 chickens, provides a relatively high profit of 27,178,137 (Twenty-seven million one hundred seventy-eight thousand one hundred thirty-seven rupiah) in a single production cycle, with a Performance Index (PI) above the standard of 359. The R/C ratio calculation of 1.1 indicates that this business is viable, but it can still be improved by adopting more advanced technology, such as the use of closed-house housing and better operational standards for poultry farming. Adopting best management practices is crucial for optimising broiler production, covering areas such as biosecurity, feed management, and environmental control, including biosecurity, feed management, environmental control, and animal welfare. Thus, farmers can improve the efficiency of their businesses, reduce the risk of disease, increase overall productivity, and ensure the long-term sustainability of their businesses. This requires a commitment to continuous learning, experimentation, and adaptation. Scientifically, this study shows that the integration of financial and technical indicators can be used as a more comprehensive evaluative approach in assessing the sustainability of semi-closed house broiler chicken businesses. In addition to economic and technical aspects, this study highlights important social issues related to broiler farming development. The adoption of improved production systems has implications for labour dynamics, including the need for higher skills, better occupational health and safety standards, and fair workload distribution for farm workers. Improved management practices can also strengthen farmer resilience by reducing income volatility, thereby contributing to household welfare and rural economic stability. Furthermore, better environmental control and waste management practices help minimise potential conflicts with surrounding communities related to odour, waste disposal, and biosecurity risks. Practically, the results of this study can be used as a reference for medium-scale farmers in determining strategies to increase production efficiency and make investment decisions regarding housing systems.

Ethical Approval

This study did not require ethical approval as it used operational company data and employee interviews with internal permission from Lancar Jaya Farm.

Informed Consent Statement

All participants were informed about research objectives, and informed consent was obtained prior to interviews and data collection

Authors' Contributions

HNE and SI contributed to conceptualization, methodology, data collection, analysis, and write the original draft. HNE contributed to review & editing.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

Data Availability Statement

The data presented in this study are available on request from the corresponding author due to privacy reasons.

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Notes on Contributors

Hana Nur Eritrina
Hana Nur Eritrina is a faculty member in the Agribusiness of Animal Husbandry Program at Politeknik Pembangunan Pertanian Malang. She specializes in livestock agribusiness analysis, farm-level business feasibility, and the development of sustainable livestock enterprises. As a contributor to this research, she provided substantial input in designing the livestock business analysis framework, interpreting economic and managerial data, and ensuring the relevance of the study to practical conditions faced by smallholder livestock farmers. Her expertise supported the alignment of analytical methods with real-world agribusiness practices in the animal husbandry sector, strengthening both the academic rigor and applied value of the research.

Salsabila Imtaza
Salsabila Imtaza is an undergraduate student in the Agribusiness of Animal Husbandry Program with a strong academic interest in the livestock sector. Her concentration focuses on livestock production systems and agribusiness practices. As a contributor to this research, she was actively involved in data collection, field observations, and preliminary analysis related to livestock business activities. She also supported the organization of primary data, assisted in interpreting field findings, and contributed to ensuring that the research reflects actual conditions and challenges faced by livestock enterprises.

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