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Evaluation of Financial Feasibility of Egg-Laying Chicken Farming Business at CV "X", South Lampung, Indonesia

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Abstract.
Background: Financial feasibility analysis enables entrepreneurs to get a clear picture of the potential profits that can be obtained, the time required for capital returns, and the strategies that must be adopted to face market challenges. **Aim:** The purpose of this research is to evaluate the economic feasibility of layer chicken farming at CV Rachmadi in Karang Sari Village, Jati Agung District, South Lampung. **Methods:** Primary and secondary data related to the farm's operations were collected in this study using qualitative and quantitative descriptive approaches. Primary data was obtained through direct observation and interviews with the owner and manager of the business. Secondary data was gathered from relevant literature and financial reports. The focus of the financial analysis is on costs, revenues, and profit projections. This analysis was conducted using methods such as net present value (NPV), Net B/C ratio, and internal rate of return (IRR). **Results:** The results of the study indicate a positive Net Present Value (NPV) of IDR 1,629,571,539.11, a B/C ratio (Net B/C) of 3.53, and an IRR of 47%, demonstrating that this business is financially feasible and profitable. **Conclusion:** These findings suggest that investing in this farm has good potential for long-term profit.

Keywords: feasibility analysis; IRR; layer chicken far; Net B/C ratio; NPV

Introduction

The livestock sector in Indonesia has promising growth prospects, particularly given the high demand for livestock products such as chicken. As population growth increases, demand for animal protein sources also increases (Kusmaria, *et al* 2020). Poultry agribusiness is one of the commodities that creates animal protein food in the government's efforts to strengthen national food security, foster the independence of people's businesses, maintain and synergistically utilize the diversity of local resources, for the sake of sustainable livestock businesses and encourage and create products that are able to compete in efforts to achieve export expansion (Saragih, 2010). One type of poultry often raised for commercial purposes is laying hens. Eggs are a crucial product of laying hen farming, contributing to meeting the community's need for animal protein.

The development of laying hen production and population in Indonesia over the past few decades has shown a significant upward trend, reflecting the sector's crucial role in meeting the population's animal protein needs and supporting national food security. According to data from the Central Statistics Agency (BPS) (2022), Indonesia's egg production reached 5,566,339.44 tons. In Lampung Province, egg production reached 213,206.31 tons in 2022. Demand for egg production in this province is also quite high, primarily to meet household consumption, the food industry, and traditional markets.

Developing a laying hen farm offers promising business opportunities. However, success in this business depends not only on increased production but also on sound financial management and thorough business planning (Handayani *et al* 2022) . Therefore, financial feasibility analysis is an important step to determine whether

investment in this business will generate the expected profits in the long term (Amalia, Fitri, Dalapati, & Fahmi, 2020) .

One of CV Rachmadi's laying hen farms in Karang Sari Village, Jati Agung District, South Lampung, has significant economic potential. Its strategic location and easy accessibility for product distribution are advantages for this business. Furthermore, a supportive community environment and the availability of a local workforce provide advantages in starting and growing the business. The purpose of this business feasibility analysis is to determine whether CV Rachmadi's laying hen farm is financially viable and can generate long-term profits. From a financial perspective, the analysis involves evaluating investment costs, operating costs, estimated revenues, and projected profit and loss. This approach is crucial to ensure the business can grow steadily and provide an adequate return on investment (Azmi *et al,* 2017).

By conducting a financial feasibility analysis, entrepreneurs can get a clear picture of the potential profits that can be obtained, the time required for capital returns, and the strategies that must be adopted to face market challenges (Marhawati, 2019). Therefore, the aim of this study is to evaluate the feasibility of egg-laying chicken farming from a financial perspective to ensure that this business can grow and contribute sustainably to the supply of chicken meat.

Methods

The research used in this feasibility study of CV Rachmadi's laying hen farm business involved quantitative and qualitative descriptive approaches to evaluate financial aspects in October 2023. The sample was selected using a purposive sampling method. The primary sample was CV Rachmadi, a laying hen farm in Karang Sari Village, Jati Agung District, South Lampung. CV Rachmadi was selected as a sample due to its significant economic potential, strategic location, and good distribution accessibility.

Primary data was collected through direct interviews with CV Rachmadi's business owners, managers, and employees, as well as direct observation at the business location to obtain a comprehensive overview of business operations. Data collection techniques included direct observation at the farm to understand the production process, feed management, chicken care, and coop conditions. Documentation included collecting documents such as financial reports, production records, sales data, and marketing reports, which were used in the financial analysis.

This research was conducted using a descriptive analysis method that encompasses both qualitative and quantitative approaches. The data obtained were then tabulated and analyzed using mathematical techniques. To analyze costs and profits, certain mathematical formulas are used.

$TC = TVC + TFC$

$TR = PQ$

$\pi = TR - TC$

Description:

TC : total cost (IDR)
TVC : variable cost (IDR)
TFC : fix cost (IDR)
TR : total revenue (IDR)
P : price (IDR/kg)
Q : chicken egg production (kg)
Π : profit (IDR)

The feasibility analysis of the egg-laying chicken farming business was carried out using a cost-benefit analysis approach, which involves investment criteria indicators such as Net Present Value (NPV), Benefit-Cost ratio (Net B/C ratio), and Internal Rate of Return (IRR) (Sutarni & Fitri, 2023).
Net Present Value (NPV) mathematically:

$$\mathbf{NPV}: \sum_{t=0}^{n} \mathbf{Bt}/(1+\mathbf{i})^{t} - \mathbf{Co} + \sum_{t=0}^{n} \mathbf{Ct}/(1+\mathbf{i})^{t}$$

Benefit Cost Ratio mathematically:

$$\frac{\mathbf{B}}{\mathbf{C}}\mathbf{Ratio}: \sum_{t=0}^{n} (\mathbf{Bt}-\mathbf{Ct})/(1+\mathbf{i})^{t} / \mathbf{Co} + \sum_{t=0}^{n} (\mathbf{Ct}-\mathbf{Bt})/(1+\mathbf{i})^{t}$$

Internal Rate of Return (IRR) mathematically:

$$\mathbf{IRR}: \mathbf{i}^{+} + \left(\frac{\mathbf{NPV}^{+}}{\mathbf{NPV}^{+} - \mathbf{NPV}^{-}}\right) \mathbf{x} \left(\mathbf{i}^{-} - \mathbf{i}^{+}\right)$$

Description:
B_t : Total revenue
C_t : Total cost
i : Bank interest rates
T : Year
i^+ : The bank interest rate that produces NPV $^+$
i^- : The interest rate that produces the NPV $^-$

Decision::
NPV > 0; B/C ratio > 1; IRR > i = Egg-laying chicken farming business is feasible
NPV < 0; B/C ratio < 1; IRR <i = Egg-laying chicken farming business is not feasible

Results and Discussion

In a laying hen farming business, such as that run by CV Rachmadi, operational costs can be categorized into three main groups: fixed costs, investment costs, and variable costs. Each of these cost categories has different characteristics and impacts the overall profitability and operational efficiency of the business (Fitri *et al,* 2018). Fixed costs are costs that are incurred consistently and do not change according to the number of eggs produced (Kusmaria, Fitri, Sudiyo, & Anggraini, 2021).

Initial investment costs include significant outlays required to start the business, such as building a barn, purchasing equipment, and providing other facilities to support livestock operations. According to reports, CV Rachmadi required approximately IDR 200,000,000 for the barn and other equipment. This investment is a one-time expense but has a long-term impact on production capacity and operational efficiency.

Fixed costs must be incurred even though CV Rachmadi's laying hen production fluctuates. The cost of building cages and other facilities reached IDR 600,000,000. This cost is one of the largest components of fixed costs. Equipment and machinery include drinking troughs, heaters, lights, thermometers, buckets, scoops, hoses, shovels, and water drums. Initial electrical installation costs IDR 823,000. Permanent Labor Salaries for leaders, managers, secretaries, treasurers, and other division staff total IDR

69,900,000 per month. This total fixed cost includes expenses necessary to prepare facilities and basic farm operations regardless of the level of laying hen production.

Variable costs in egg-laying chicken farming are costs that change with the level of production and are calculated based on the needs per production cycle (Fitri *et al* 2023). Variable cost components based on data from the feasibility study report for chicken chicks (DOC - Day Old Chick), chicken rations or feed, medicines and vaccines, temporary labor, fuel, rice husks, and water. The total cost of egg production at CV Rachmadi is IDR 1,520,871,148.57 per year.

In the feasibility analysis of CV Rachmadi's laying hen farm, the bank used as a reference was Bank Republik Indonesia (BRI), which applies a 7% annual interest rate for People's Business Credit (KUR). To ensure that the coop can be fully utilized for 12 years before needing replacement, a timeframe was set for the analysis.

Based on the analysis conducted, the NPV calculation results for 12 years show a value of IDR 1,629,571,539.11. The NPV value is positive and greater than zero, which means that this project is projected to generate a net profit after taking into account all costs and revenues discounted to the present value. A positive NPV value indicates that this laying hen farm project is feasible to run because it is expected to generate more value than the costs incurred. A positive NPV of IDR 1,629,571,539.11 indicates that this investment will be profitable and can increase economic value for the owner and investors. This NPV result also reflects that this livestock business has good sustainability prospects, because it is able to return the initial capital and provide additional profits during the 12-year analysis period. This reduces the risk of financial loss and increases the attractiveness of the investment.

The net profit from this investment far exceeds the costs, as indicated by the Net B/C ratio of 3.53. This means the venture is highly profitable, with net profits exceeding the total costs. This value demonstrates high resource efficiency and is a positive indicator of the venture's long-term financial sustainability (Puspita *et al* 2024).

The IRR of 47% is significantly higher than the discount rate used in the analysis, which is 7%. This indicates that the internal rate of return of this investment far exceeds the cost of capital or the minimum rate of return expected by investors. In other words, this project not only returns the initial investment but also generates significant profits. The high IRR indicates that this investment is highly profitable and has strong appeal to investors. Based on the IRR of 47%, CV Rachmadi's laying hen farming business is considered highly profitable and worthy of continuation or even expansion. The IRR value, which is well above the discount rate, indicates that this project has high profitability potential, providing a strong incentive for owners and investors to develop the business (Sari, Saty, Desfaryani, & Fitri, 2024).

The results of CV Rachmadi's research which showed a positive NPV of IDR 1,629,571,539.11 and an IRR of 47% are very relevant to Abadi *et al.* (2022), where the rate of return is higher than the local interest rate, indicating that this business has the potential to provide large profits in the future. Sumon et al. (2023) emphasized the importance of using NPV and IRR in determining the financial feasibility of chicken farming in Asia. Similar to other countries, CV Rachmadi's research showed a positive NPV and a high IRR (47%), indicating that the business is worth investing in. These findings emphasize that, despite significant operational cost challenges, investment in laying hen farming can generate substantial profits in Asia.

Nisar dan Kumar (2021) focused on cost efficiency and B/C ratio analysis in poultry farming. In this study, CV Rachmadi recorded a very high B/C ratio of 3.53, indicating that

net profits far exceeded costs. This is in line with the study of Nisar dan Kumar (2021) which states that a B/C ratio above 1 indicates efficient resource use and high profitability. This study also supports that a high B/C ratio reflects good financial management at CV Rachmadi. Using a combination of NPV, IRR, and the B/C ratio is an effective method for assessing the feasibility of a chicken farming business, especially in the face of increasing operational costs (Zhang, 2023). The results of this study can help livestock businesses in making strategic decisions.

The research results of Ernawati et al (2025) also analyzed the business feasibility of a farm named Hadi Yunanto located in Sukolilo Village, Wajak District, Malang Regency. Comparing the feasibility analysis of the laying hen farm business of CV Rachmadi and Hadi Yunanto Farm, there are several significant differences that affect the financial feasibility results. CV Rachmadi shows an NPV (Net Present Value) value of IDR 1,629,571,539.11, higher than Hadi Yunanto Farm which only reached IDR 1,490,303,000. This reflects that CV Rachmadi has better profitability in the long term. In addition, CV Rachmadi's IRR (Internal Rate of Return) value of 47% is much lower than Hadi Yunanto Farm which reached 301%. This difference can be explained by the different analysis periods, where CV Rachmadi was analyzed for a period of 12 years, while Hadi Yunanto Farm only for 3 years. Hadi Yunanto Farm's very high IRR also reflects the potential for significant short-term profits, but it doesn't necessarily reflect long-term stability, as high operational costs can threaten business continuity if egg prices or demand decline. Conversely, CV Rachmadi has more efficient cost management and demonstrates better profit stability despite its lower IRR.

Conclusion

The egg-laying chicken farming business at CV Rachmadi shows very promising prospects based on the financial feasibility analysis that has been conducted. The Net Present Value (NPV) calculation of IDR 1,629,571,539.11 indicates that this investment will provide significant profits. The Internal Rate of Return (IRR) of 47% is much higher than the interest rate used in the analysis, which is 7%, confirming that this business is feasible to run and very profitable. The benefit-cost ratio (B/C ratio) of 3.53 shows that the benefits obtained from the investment far exceed the costs incurred. This indicates that the utilization of resources in this business is very efficient and capable of providing long-term profitability. Based on these indicators, this egg-laying chicken farming business is considered feasible to continue and can contribute sustainably to the supply of chicken meat.

Furthermore, CV Rachmadi can implement policies to expand production capacity and diversify products to maximize profits. Strategies to increase operational efficiency through supply chain optimization, the application of modern technology, and chicken health and nutrition management are crucial to maintaining productivity and minimizing costs. Sound risk management, the implementation of quality standards, and environmentally friendly farming practices are also necessary for long-term business sustainability. Human resource development through training and improving employee welfare will support operational performance, ensuring the business remains competitive and sustainable.

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