

FEASIBILITY ANALYSIS OF HATCHERY BUSINESS DEVELOPMENT AT BERKAH MANDIRI FARM LAMONGAN MEAT DUCK FARM

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Abstract: This study aims to analyze the feasibility of developing a hatchery business at Berkah Mandiri Farm, a meat duck farming enterprise in Lamongan Regency. The evaluation focuses on five key aspects: legal, market, technical, human resources (HR), and financial, to determine the potential sustainability of the hatchery business. This research adopts a qualitative approach with axial coding techniques in data analysis to identify relationships between variables. The findings reveal that the hatchery business has a significant market opportunity due to the increasing demand for Day Old Ducks (DOD) in the region. Technically, modern hatchery technology can enhance production efficiency and DOD quality. The HR aspect emphasizes the importance of workforce training to support business sustainability. Financial analysis indicates that an investment of IDR 269,700,000 results in a Payback Period of 14.16 months, with a positive Net Present Value (NPV) and a competitive Internal Rate of Return (IRR), confirming the project's feasibility. Considering these factors, this study concludes that the establishment of a hatchery in Lamongan Regency is both economically and strategically viable and can contribute to the independence of DOD supply for local farmers. Additionally, this study provides strategic recommendations for the sustainable and competitive management of the hatchery business in the national poultry market.

Keywords: *Hatchery, feasibility study, axial coding, poultry, Day Old Ducks (DOD)*

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1. Introduction

Poultry farming, particularly hybrid broiler ducks, is a crucial component of Indonesian agribusiness, playing a vital role in meeting the population's animal protein needs, contributing to the rural economy, and creating jobs (Directorate General of Animal Husbandry and Animal Health, 2017). Duck meat consumption continues to experience significant growth, as reflected in data from the Central Statistics Agency (BPS, 2024), which shows an increase in duck meat production in East Java from 6,973.7 tons in 2021 to 15,557.4 tons in 2023. This increase is driven by the diversification of duck-based menus, which in turn has triggered a surge in demand for hybrid Day-Old Duck (DOD) as a primary raw material.

The high demand for DOD is not matched by an adequate and stable supply in each region. As a case study, Lamongan Regency, with a duck population of 376,288 in 2022 (BPS East Java, 2024), has no local hatchery. Farmers, including Berkah Mandiri Farm, rely on supplies

from other regencies such as Mojokerto, Jombang, and Kediri. This reliance on external suppliers creates supply instability and price fluctuations, disrupting the smooth production cycle and potentially reducing profitability.

Berkah Mandiri Farm, with a population of approximately 35,000 head and a weekly DOD requirement of 7,900 head, directly experiences the impact of this instability. Internal data shows that the DOD delivered by its four suppliers is often inconsistent and does not meet the agreed quota. This situation not only poses an operational threat but also presents a strategic opportunity to establish an independent hatchery. The establishment of a hatchery in Lamongan is predicted to not only stably meet internal needs but also has the potential to serve unmet regional market demand.

Therefore, a comprehensive investment feasibility analysis is required to assess the viability of establishing such a hatchery. The analysis must include a multidimensional assessment encompassing legal aspects (permitting compliance and AMDAL) (Setiawan, 2020), market aspects (potential demand and expansion) (Rahman, 2020), technical aspects (facility design and operations) (Susanto, 2020), human resource management aspects (workforce competency) (Yusuf, 2020), and financial aspects (economic feasibility and investment) (Pratama, 2020).

Based on this description, the objectives of this study are to: (1) Analyze the feasibility of hatchery development from a legal, market, technical, human resource management, and financial perspective; and (2) Determine the impact of hatchery development on increasing the profitability of Berkah Mandiri Farm.

2. Research Method

This research adopted a qualitative approach with a constructivist philosophical foundation to understand the social and technological context of the implementation of automatic duck egg incubators in hatcheries. An integrated approach was employed, combining analysis of technical, financial, human resource, marketing, and legal aspects. Data were collected through in-depth interviews, field observations, and documentation studies, then analyzed using in-depth qualitative analysis techniques and axial coding to identify relationships between categories. Data validity was maintained through method triangulation and respondent validation.

The research location was selected in Mantup District, Lamongan Regency, due to the absence of similar hatchery businesses in the area. This provides an undisturbed market opportunity, ease of market penetration, potential support from the government and local community, and reduced risk of business competition.

The research informants consisted of various key stakeholders, including active and inactive hatchery owners of various scales (small, medium, and large), sales managers, and integrated farm owners. The selection of informants aimed to gain a comprehensive perspective on operations, challenges, and strategies in the hatchery industry.

Data collection was conducted using primary and secondary data. Primary data was obtained through in-depth interviews, surveys, and questionnaires directed at hatchery owners, farmers, and industry experts. Secondary data was obtained from public sources such as government statistics, scientific publications, and news articles.

Data were analyzed qualitatively using axial coding to identify relationships between categories such as technical, financial, human resource, and market aspects. The analysis included:

1. In-depth qualitative analysis (in-depth interviews with stakeholders)
2. Competitive analysis (SWOT analysis)
3. Cost-benefit analysis (NPV, IRR, payback period)

Data validity was maintained through method triangulation (combining data from interviews, surveys, and document review) and respondent validation (member checking). This approach ensured data accuracy and reliability and reduced bias in interpretation. Meanwhile, the Hatchery feasibility criteria included:

1. Legal: Compliance with permits, environmental impact analysis (EIA), and local regulations.
2. Market: High DOD demand, minimal competition, and support from local farmers.
3. Technical: Use of automated technology, adequate production capacity, operational efficiency, and a good sanitation system.
4. Human Resources: Availability of skilled labor, regular training, a clear organizational structure, and welfare policies.
5. Financial: Positive NPV, $IRR > \text{bank interest rate}$, reasonable payback period, and stable cash flow.

Project feasibility is determined by meeting all of the above criteria.

3. Results and Discussion

3.1. Results

This study aims to analyze the feasibility of developing a hatchery at Berkah Mandiri Farm in Lamongan by reviewing legal, market, technical, human resource, and financial aspects. The results indicate that hatchery development is not only feasible but also strategic to support business sustainability and long-term profitability.

Legal Aspects

From a legal perspective, the hatchery construction meets regulatory standards. The hatchery is located approximately 393 meters from residential areas, exceeding the minimum requirement of 250 meters as stipulated in Minister of Agriculture Regulation No. 36/Permentan/OT.140/8/2007 concerning Guidelines for Good Meat Duck Cultivation. This is crucial to reduce the risk of social conflict caused by odor and waste. Compliance with business permits, environmental impact analysis (EIA), and spatial planning also strengthens operational legality (SG-12). Local community support is obtained through social approaches and CSR programs designed to provide tangible benefits to residents, such as employment and village infrastructure development (AL-11). This aspect demonstrates that legal compliance not only provides legitimacy but also strengthens harmonious relations with the local community.

Market Aspects

Market analysis shows that the demand for Day-Old Ducks (DOD) continues to increase in line with Berkah Mandiri Farm's business expansion. In 2021, demand reached 175,000, increasing to 250,000 in 2022, and 330,000 in 2023. However, external supply from Mojokerto, Jombang, and Kediri only meets 80–86% of demand, leaving a deficit of 14–20% annually. This situation emphasizes the need for supply independence through internal hatcheries. Price trends also indicate positive opportunities, with the average DOD price increasing from IDR 7,333 (2021) to IDR 9,291 (2023). Price spikes primarily occur ahead of Ramadan and Eid al-Fitr when demand for duck meat increases (FY-8).

The SWOT analysis reveals key strengths in the form of a solid internal production system, high demand for DOD, and minimal local competition. Opportunities include regional market demand (Lamongan, Gresik, Tuban, Bojonegoro) and government policy support for agribusiness (Hevrizen et al., 2023). However, threats remain, such as disease risks, fluctuating feed prices, and the potential entry of new competitors. The implemented strategy includes penetration pricing with a competitive price of IDR 7,500 per head for the first five years, penetrating 20% of internal market demand, and product differentiation through the use of superior broodstock to produce DOD of higher genetic quality (AG-5). This strategy aligns with Porter's (1985) theory, which emphasizes the importance of differentiation and competitive pricing in building competitive advantage.

Technical Aspects

From a technical perspective, the hatchery design utilizes modern technology in the form of an automatic incubator with temperature control features of 37–38°C, humidity of 50–70%, automatic egg rotation, and optimal ventilation. The use of this technology increases the hatching success rate to >90%, far exceeding traditional methods (60–80%) (Subagja, 2022; DY-2). The hatchery's layout includes a sterilization room, feed storage, broodstock pens (600 eggs), an incubation room with a capacity of 8,100 eggs, and a quarantine room. The relay production system allows for a continuous daily supply of DOD.

Technical evaluations indicate an average daily production of 230 quality DOD (after sorting), equivalent to 6,900 per month. With the relay system, the hatchery can support production rotations up to eight times a year. This not only ensures internal supply but also opens up distribution opportunities to local farmers. These findings align with Prasetyo et al. (2021), who stated that the application of automated technology in hatcheries can increase production efficiency by up to 20% compared to conventional methods.

Human Resources (HR) Aspect

HR management is a crucial element because hatchery operations require technical skills. The organizational structure is simple but effective, consisting of operational managers, technical personnel, and support staff. The main challenge is the limited local workforce skilled in hatchery technology. Therefore, the implemented strategies include competency-based recruitment, ongoing technical training, performance-based incentives, and creating a conducive work environment (AL-10; SG-9; SG-11; DY-5).

Ongoing training ensures employees are capable of operating modern machinery, while incentives such as annual bonuses and even small share ownership increase employee loyalty. This approach aligns with Hasibuan (2012), who asserted that technical training can increase efficiency by up to 25% and performance-based incentives can increase employee productivity by 15% (Fahmi & Syahputra, 2019). Thus, HR plays a direct role in ensuring the consistent quality of the DOD produced.

Financial Aspect

The financial analysis results demonstrate strong feasibility. The initial investment of IDR 269,700,000 includes the purchase of land (IDR 60,000,000), broodstock (IDR 72,000,000), an incubator (IDR 40,500,000), and other supporting infrastructure. With a production of 6,900 DOD/month plus the sale of fertile eggs, monthly income reaches IDR 52,650,000. After deducting operational costs (IDR 33,610,000), the net profit is IDR 19,040,000/month, or IDR 228,480,000/year.

A price comparison shows that DOD from the internal hatchery are IDR 1,791 cheaper per head than those purchased externally. This increases cost efficiency by IDR 148,294,800/year.

(internal data). The financial feasibility analysis showed an NPV of IDR 685,236,980.67 (>0), an IRR of 80% ($>5\%$), and a Payback Period of 14.16 months, indicating that the project is highly financially viable (Garrison, 2015). These results are consistent with research by Artiyasa et al. (2021), which found that implementing modern technology in hatcheries can increase profitability by up to 50% with a 15% reduction in operational costs.

3.2. Discussion

The findings of this study confirm that the development of a hatchery at Berkah Mandiri Farm is a strategic step to increase supply independence, cost efficiency, and business sustainability. Legally, the project complies with regulations and enjoys social support; market-wise, there is high demand and positive price prospects; technically, modern technology increases productivity; human resources, recruitment and training strategies support efficiency; and financially, the NPV, IRR, and Payback Period indicators indicate high feasibility.

The practical implication of this research is the importance of integrating technical aspects, human resource management, and market strategy in optimizing hatchery success. In addition, hatchery development can also be a model for other farms in reducing dependence on external suppliers and increasing regional competitiveness.

4. Conclusion

Based on the research results, it can be concluded that hatchery development is a strategic solution to overcome Berkah Mandiri Farm's dependence on external suppliers while increasing supply independence. The market penetration strategy through competitive pricing has proven effective in attracting local farmers and strengthening regional market segmentation, with trust in DOD quality being the primary driver of market acceptance. From a technical perspective, the use of modern hatching technology and the selection of high-quality broodstock ensure efficiency and consistent product quality, as axial coding results emphasize the importance of broodstock management and technology in maintaining production standards. Financial analysis demonstrates project feasibility, with a projected positive return on investment, with operational cost control and efficient resource use identified as key determinants of profitability. The hatchery's operational success also depends heavily on workforce competency, making ongoing training and performance incentives key factors in maintaining human resource productivity. Furthermore, the hatchery project complies with applicable regulations, including the minimum distance requirement from residential areas, thus strengthening the legitimacy and sustainability of the business.

However, this study has several limitations. First, time constraints prevented repeated data collection through interviews and observations, while some informants had busy schedules, making it difficult to delve deeper into the data. Second, limited access to more detailed financial data, particularly regarding operational costs and long-term projections, necessitates the use of several assumptions in the financial analysis. Furthermore, some sensitive information regarding pricing and investment strategies is not fully accessible. Third, because the hatchery is still in the planning stage, this study was unable to directly test operational effectiveness, such as hatching success rates or production management efficiency. Therefore, most of the technical data comes from secondary sources and relevant case studies. Therefore, further research is recommended to conduct evaluations at the actual implementation stage to provide a more accurate picture of operational effectiveness and long-term financial projections.

Recommendations

The recommendations in this study are as follows:

1. Market Expansion and Product Diversification by expanding local markets and diversifying DOD products to increase competitiveness.
2. Technology Improvement through Optimizing Automatic Hatchery Technology to Support Efficiency.
3. Regularly evaluate financial performance to maintain operational stability.
4. Conduct empowerment and education programs to increase farmer confidence in hatchery products.
5. Conduct ongoing training to ensure workforce competency to support production quality.

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