

Economic Analysis of Cattle Business in Program Sosial Bank Indonesia (PSBI) at Pesantren An-Nur II, Malang, Indonesia

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ABSTRACT: Cattle fattening business has great potential in enhancing the economic independence of Islamic boarding schools (pondok pesantren) and supporting national food security. This research analyzes the economic and technical aspects of cattle fattening business at An-Nur II Islamic Boarding School, supported by Bank Indonesia's Social Program (PSBI) through the provision of sustainable cattle farming infrastructure. This program implements an integrated livestock-plant system that builds an environmentally friendly, independent, and sustainable farming ecosystem. Research results show that in the initial stage of maintenance, this business produces an R/C Ratio value of 1.08, indicating that the business is profitable, albeit with a small margin. Projection analysis shows that by utilizing land for self-production of forage and maximizing stable capacity, the R/C ratio value can increase to 1.17, with a profit per head reaching Rp3,640,806. The main challenges in implementing this business are non-standardized feeding practices and lack of intensive monitoring of cattle body weight. Additionally, the livestock purchasing system is still based on estimates without accurately considering body weight, so profit potential is not yet maximized. To improve business efficiency, optimization of the feeding system, monitoring of body weight growth, and implementation of better management-based livestock technology are needed. With improvements in technical and managerial aspects, this business model has the potential to be replicated in other Islamic boarding schools to enhance economic welfare and support national food security.

KEYWORDS: Cattle fattening, Islamic boarding school, PSBI, livestock economics, food security.

INTRODUCTION

Islamic boarding schools (pondok pesantren) are the oldest Islamic educational institutions in Indonesia, dating back to the 16th century. Beyond playing important roles as centers for religious education, character formation, and community empowerment, pesantren have also begun contributing to sharia-based economic development through business unit management. These efforts aim to increase the economic independence of pesantren while providing benefits to surrounding communities and the environment. One sector being developed within pesantren environments is livestock agribusiness, which has the potential to become a source of independent income while supporting national food security.

Domestic beef production still cannot meet the continuously increasing consumption needs. In 2021, beef production only contributed 10.73% to national meat production (Directorate General of Livestock and Animal Health, 2022). This causes an imbalance between production and consumption, impacting soaring meat prices, especially approaching major holidays like Eid. According to the Central Statistics Agency (BPS) report in 2024, East Java is the province with the largest beef cattle population in Indonesia. This encourages East Java to have great potential in developing the livestock sector, including those managed by pesantren.

Bank Indonesia runs the Bank Indonesia Social Program (PSBI) as part of its Social and Environmental Responsibility, widely known as Corporate Social Responsibility (CSR). PSBI is designed to support economic development, community education, and social assistance (charity) with themes updated annually and required to be implemented by Bank Indonesia Representative Offices (Ritawati and Mubarak, 2015). This program includes initiatives such as philanthropy, sustainable business practices, reduction of negative production impacts on the environment, implementation of diversity and inclusion, and improvement of community and employee welfare. Through CSR, companies are expected to establish harmonious relationships with stakeholders while maintaining reputation and legitimacy in society.

As one of the PSBI implementers from Bank Indonesia, the Department of Islamic Economics and Finance (DEKS) collaborates with the Faculty of Animal Science, Brawijaya University (Fapet UB). This collaboration is a continuation of the 2022 PSBI implementation focused on different Islamic boarding schools and commodities. DEKS targets Islamic boarding schools as aid program recipients to support the development of Islamic economics and the Halal Value Chain. This program aims to empower



pesantren and local communities, control food inflation, accelerate halal certification, and expand replication and Islamic business models. Bank Indonesia's collaboration with the Faculty of Animal Science, Brawijaya University reflects the implementation of the Three Pillars of Higher Education: education, research, and community service, which is expected to have a positive impact on implementing modern and efficient livestock practices in pesantren environments.

Pondok Pesantren An-Nur II Al-Murtadlo is a large Islamic boarding school in Malang City with 8,000 students. In 2017, this pesantren received a nomination as one of the ten largest and best pesantren in Indonesia according to JTV. Not only that, shortly after, Ponpes An-Nur II also received an award as an inspiring modern pesantren in the Santri Of The Year event held in 2019 and a MURI Record in the category of regional dance performers with LED lights by the largest number of female students. An-Nur II Islamic Boarding School was successfully selected as a PSBI recipient in beef cattle business development. This includes various considerations such as the potential of An-Nur II Al-Murtadlo Islamic Boarding School in improving human resources (students), land availability, and availability of other supporting facilities. The program includes providing facilities and infrastructure (housing buildings), as well as training and assistance in managing beef cattle farming.

This research aims to determine the economic analysis of the pilot program being run and business projections to estimate optimal income in the implementation of PSBI at An-Nur II Islamic Boarding School in Malang. The results of this study are expected to become recommendations for ecosystem models that can be replicated nationally, in accordance with Bank Indonesia's objectives. On the other hand, the lack of studies discussing CSR implementation in Islamic boarding schools drives this research to have high urgency because it: (1) fills gaps in empirical studies on the economic sustainability of livestock businesses in pesantren environments; (2) provides a model for integrating Islamic banking CSR with pesantren economic development; and (3) documents best practices that can be replicated to strengthen national food security.

METHOD

To achieve these objectives, this research uses a case study approach with quantitative analysis methods, designed to comprehensively measure the feasibility and sustainability of the beef cattle fattening business unit at An-Nur II Islamic Boarding School, Malang. The location selection was based on the absence of scientific studies evaluating the economic effectiveness of the business resulting from the implementation of Bank Indonesia's Social Program (PSBI) at this pesantren. Data collection was conducted from December 2024 to March 2025. Based on the source, the data is divided into two categories:

a. Primary data obtained through:

- Structured interviews with livestock business unit managers, santri (students) involved in maintenance, and representatives from Bank Indonesia and the Faculty of Animal Husbandry, Universitas Brawijaya
- Direct observation of livestock management practices, feeding, and waste management
- Documentation

b. Secondary Data:

- Management documents from the pesantren's livestock business unit
- Reports and publications from the Bank Indonesia Social Program
- Statistical data from the Department of Animal Husbandry and the Central Statistics Agency
- Literature studies related to cattle fattening, integrated farming systems, and pesantren economics

DATA ANALYSIS

To understand the conceptual context and best approaches in achieving the research objectives, the following is an analysis to evaluate the economic feasibility of the livestock business, including:

- Profit and Loss Analysis

Production Costs

a. Total Cost

Total cost is the overall expenditure for running a business to produce output (Sari, et al., 2023). The costs incurred for farming are divided into two, namely variable costs and fixed costs. Fixed costs do not depend on the volume of production, or it can be said that the amount of this cost is not affected by changes in the number of goats produced, while variable costs are costs that change according to the quantity of livestock (Anwar, et al., 2023). Total fixed costs

in this study consist of fixed costs which are the cost of cage depreciation and non-fixed costs which are the cost of livestock maintenance needs during this business.

$$TC = FC + VC$$

Description:

TC: *Total cost* (Rupiah)

FC: *Fixed cost* (Rupiah)

VC: *Variabel cost* (Rupiah)

b. Revenue

Revenue is the money received by the company from the business being run. Farming revenue comes from the quantity of production multiplied by the selling price (Aulia, et al., 2023).

$$TR = P \times Q$$

Keterangan:

TR: *Total Revenue*

P: *Price of Quality*

Q: *Quantity*

c. Profit

Income or profit is the difference between revenue and total expenditure costs in a business (Aisyah, et al., 2023).

$$\pi = TR - TC$$

Description:

π : Profit (Rupiah)

TR: *Total Revenue* (Rupiah).

TC: *Total Cost* (Rupiah).

• Break Even Point Analysis

Break-even point (BEP) is a period in a business where the company does not experience profits and also does not experience losses, which can be said that the company's total revenue is equal to the total costs incurred (Sugiantoro, et al., 2023).

$$BEP \text{ Price (IDR)} = \frac{\text{Total Expenses}}{\text{Total Production Quantity}}$$

$$BEP \text{ Product} = \frac{\text{Total Expenses}}{\text{Selling price of each unit}}$$

• Feasibility analysis

Financial analysis is an activity to analyze the finances of a business by comparing expenses (costs) with profits (benefits), so that the return value of a business can be determined. The financial feasibility analysis used in this study uses the R/C Ratio indicator.

a. *R/C Ratio (Return Cost Ratio)*

R/C Ratio is the ratio between income and expenditure costs. (Soekartawi, 1995). The use of R/C Ratio can determine whether a business is profitable or not (Moni, et al., 2024).

$$R/C \text{ Ratio} = \frac{\text{Total Revenue}}{\text{Total Cost}}$$

R/C can draw conclusions including:

- If R/C Ratio > 1, then the business is profitable.
- If R/C Ratio = 1, then the revenue is equal to BEP.
- If the R/C Ratio < 1, then the business is at a loss.



- Forecasting Business Analysis

Quantitative projection methods are divided into two groups: Casual Forecasting and Time Series. Casual Forecasting includes multiple regression, econometric models, and others, while the Time Series Method addresses future projections based on historical and current data (Arifin, 2007). The research conducted uses the time series forecasting method by looking at the company's historical data to make future forecasts. Analyzing is necessary by looking at previous history to predict future developments, thus providing an effective assessment until a certain time limit (Zhang, 2024). The results of projection indicators can help investors and in looking at investment risk management (Varshney and Dilip, 2024). Time series forecasting has been a traditional research for decades (Wang, et al., 2024). The data needed in analyzing projections are production costs during the course of the business as a reference to estimate the amount of future expenses and the selling price of livestock to see the estimated future revenue. The projection calculation carried out in this study is using Microsoft Excel.

RESULT AND DISCUSSION

Program Sosial Bank Indonesia

Bank Indonesia is the Central Bank of the Republic of Indonesia that operates based on Law Number 23 of 1999. As a central bank, Bank Indonesia has an important role in the national financial system, including in monetary policy regulation, maintaining financial system stability, and supporting currency stability. One of the main factors affecting economic stability is inflation (Afrylia, et al., 2024). The Bank Indonesia Social Program (PSBI) is a strategic initiative of Bank Indonesia in supporting community economic empowerment with a focus on the productive sector, including livestock. Bank Indonesia Head Office along with 46 Representative Offices throughout Indonesia have implemented various economic capacity building programs and development of Micro, Small, and Medium Enterprises (MSMEs). These programs include:

- Development of strategic food cultivation,
- Development of superior and export commodities,
- Strengthening entrepreneurship (Bank Indonesia, 2021).

Based on the publication "Dedikasi untuk Negeri" books published by Bank Indonesia, in 2019, there are:

- 532 economic capacity development programs to support strategic food security,
- 1,332 human resource capacity building programs through policy communication,
- 4,062 social care programs focusing on environmental aspects.

As part of this initiative, the Department of Islamic Economics and Finance (DEKS) selected An-Nur II Islamic Boarding School in Malang Regency as the location for implementing PSBI, considering the availability of adequate potential, including sufficient land availability, access to infrastructure supporting the livestock program, and available capital for purchasing cattle stock. Additionally, the high number of Islamic boarding schools in Malang makes this program a business model that can be replicated by other pesantren.

Program Objectives at An-Nur II Islamic Boarding School, Malang, Indonesia

The Bank Indonesia Social Program (PSBI) implemented at An-Nur II Islamic Boarding School, Malang Regency is a strategic collaboration between the Department of Islamic Economics and Finance (DEKS) of Bank Indonesia and the Faculty of Animal Husbandry, Universitas Brawijaya to create a sustainable and pesantren-based cattle farming business model. This initiative is designed not only to increase the economic independence of pesantren, but also as an integrated solution to strengthen national food security, develop students' capacity, and build an environmentally friendly livestock ecosystem through a zero waste approach. Based on the cooperation between DEKS Bank Indonesia and the Faculty of Animal Husbandry, Universitas Brawijaya, this program has the following objectives:

1. Develop a pesantren-based cattle farming ecosystem that can be replicated nationally.
2. Increase the economic independence of pesantren through cattle farming businesses.
3. Improve the skills of students in the fields of animal husbandry, agribusiness, and entrepreneurship.
4. Increase production and halal certification of national beef for food inflation control.
5. Connect the livestock sector with the halal food processing industry.



6. Utilize pesantren alumni networks as markets and business partners.
7. Develop Standard Operating Procedures (SOPs) and model recommendations based on feasibility studies.
8. Develop efficient maintenance, feed, reproduction, and marketing systems.
9. Utilize livestock waste for organic fertilizer production and worm cultivation as animal feed.

Implementation of a Beef Cattle Maintenance Program

The cattle fattening program at An-Nur II Islamic Boarding School was implemented with a gradual, research-based approach. Starting on a small scale, the pesantren raised eight Limousin cattle to test the business feasibility. The selection of Limousin cattle wasn't arbitrary, but rather considered that this breed is known for its superior genetics with characteristics of rapid growth and high feed conversion efficiency, making it ideal for intensive fattening programs. Adult Limousin cattle can reach weights of 800-2,100 kg and have an average daily weight gain of 1.2-1.4 kg/day (Wibowo, 2019). Based on the following table, Limousin cattle are considered potential for development in cattle fattening businesses. The selection of Limousin cattle was not only based on economic considerations but also supported by growth performance data as shown in the following table.

Table 1. Cattle Production by Type of Cattle in Indonesia

Number	Type of Cattle	Average DWG in Indonesia (kg/day)	Average Carcass Percentage (%)	Average Adult Body Weight (kg)
1	PO	0,6-0,8	45,3-48	300-600
2	Bali	0,6-0,8	56,9-60	400-600
3	Madura	0,3-0,6	45-50	250-300
4	Brahman	0,8-1,2	45-50	800
5	Limousin	1,2-1,4	45-50	800-2.100
6	Aberdeen Angus	1-1,2	45-50	800-1.000
7	Simmental	1,2-1,4	45-50	800-1.200

Source: Wibowo, 2019.

An-Nur II Islamic Boarding School implemented its first fattening period beginning in May 2024. This maintenance period lasted for 42 days. During this time, the students and program managers gained practical experience in managing the cattle farming business, from feed management to daily livestock health care. As part of the Three Pillars of Higher Education, the Faculty of Animal Science at Brawijaya University fulfilled its role in this cooperation program by conducting training and mentoring with the following stages:

1. Facilities and infrastructure training provides participants with knowledge about the preparation of quality seeds and cage sanitation practices that ensure a healthy environment for livestock.
2. Biosecurity training by teaching effective disease prevention and control methods to minimize livestock health risks.
3. Feed management training by assisting in the making of concentrates and forage processing as well as studying the right concentrate formulation and forage processing technology to optimally meet the nutritional needs of livestock.
4. Livestock Reproduction and Health Management training by providing an understanding of systematic recording systems, livestock health monitoring methods, and good reproduction handling.
5. Training on livestock waste management to complement the value chain in the livestock business as well as product marketing strategies.
6. Monitoring and evaluation of the results of activities that have been carried out.



Figure 1. Training and Mentoring of Students
Source: Personal documentation



Figure 2. Training and Mentoring of Planting Animal Feed Plants
Source: Personal documentation

Integration System

An-Nur II Islamic Boarding School implements an innovative approach to cattle farming development through an integrated farming system. This system is designed to minimize waste and maximize value from each element in one sustainable cycle that optimizes nutrient and energy flow. The crop-livestock systems (CLS) integration approach becomes a very appropriate choice to implement. The CLS concept generally aims to increase farming efficiency by maximizing the use of internal inputs. Farmers who previously only focused on food crops are encouraged to also raise livestock to add income sources (Soeharsono, 2008). "Integrated farming systems that combine crops and livestock (mixed crop-livestock systems) offer substantial potential to improve land use efficiency and reduce greenhouse gas emissions compared to separate production systems" (Weindl et al., 2017). The livestock-plant integration system has significant potential to improve the sustainability of small-scale livestock businesses in developing countries (Herrero, et al. 2010).

This program consists of several integrated components:

1. Utilization of Manure Waste:
 - Biodigester raw materials that produce biogas as a renewable energy source for the needs of Islamic boarding schools
 - Earthworm cultivation media that increases the added value of waste
2. Earthworm Cultivation:
 - Lumbricus rubellus earthworm species are cultivated with cow dung media
 - The worm harvest is used as a high-quality alternative feed for catfish cultivation in Islamic boarding schools
 - Creates an efficient feed cycle and reduces production costs.
3. Vermicompost Production:
 - Worm castings (vermicompost) are processed into high-quality organic fertilizer
 - Vermicompost is rich in nutrients and very good for fertilizing soil
 - Application of vermicompost increases the productivity of forage feed plants
4. Planting Forage Feed Plants:
 - Intensive cultivation of forage plants such as elephant grass (*Pennisetum purpureum*)
 - Reduces dependence on external forage sources
 - Ensures the availability of quality feed on a sustainable basis
5. Cycle Back to Cattle:
 - Forage from own cultivation becomes the main feed for cattle
 - Reduces feed costs and increases the efficiency of livestock business

- Increases livestock productivity and overall agricultural system sustainability

Through this integrated system, An-Nur II Islamic Boarding School has succeeded in creating a livestock business model that is sustainable, environmentally friendly, and economical. This approach also functions as a learning laboratory for students and the surrounding community about modern agriculture with environmental awareness.

Benefits of the Integration System

The livestock integration system implemented at An-Nur II Islamic Boarding School provides various benefits in three main dimensions:

Economic:

- Significantly reduces production costs through the utilization of waste as a source of feed and fertilizer
- Creates added value from livestock by-products
- Reduces dependence on expensive external inputs
- Increases overall land productivity

Environmental:

- Minimizes environmental pollution from livestock waste
- Reduces the use of chemical fertilizers that can damage soil ecosystems
- Increases soil fertility naturally and sustainably
- Reduces greenhouse gas emissions through proper waste management

Social:

- Increases farmer-rancher income through product diversification
- Creates efficiency in resource management
- Opens new job opportunities in the pesantren environment
- Becomes a learning model for students and the surrounding community

With this system, the Islamic Boarding School can not only run a more efficient beef cattle business, but also build an ecosystem that is environmentally friendly, independent, and sustainable. This is in line with the zero waste principle, where every component in the livestock system can be maximally utilized to improve welfare and business productivity.

Economic Analysis

a. Building Asset Costs

The building asset costs are grant expenses provided by the Departemen Ekonomi dan Keuangan Syariah (DEKS) Bank Indonesia, as follows:

Table 2. Building Asset Cost

Implementation Activities	Quantity	Unit	Unit Price	Total Price	Percentage	Depreciation
Construction preparation	1	Paket	Rp7.500.000	Rp7.500.000	1%	20 Tahun
Cage Construction	1	Paket	Rp490.141.360	Rp490.141.360	52%	20 Tahun
Construction of feed sheds	1	Paket	Rp157.426.600	Rp157.426.600	17%	20 Tahun
Biogas Construction (2x3x1.5)	1	Paket	Rp45.000.000	Rp45.000.000	5%	20 Tahun
Silo Construction (5x6x2)	1	Paket	Rp75.000.000	Rp75.000.000	8%	20 Tahun
Worm Bath Construction (1x2x5)	1	Paket	Rp15.000.000	Rp15.000.000	2%	20 Tahun

Loadcell and cattle weighing monitor	1	buah	Rp14.000.000	Rp14.000.000	1%	20 Tahun
Cattle scale (pinch box)	1	buah	Rp54.000.000	Rp54.000.000	6%	20 Tahun
Chopper machine	1	buah	Rp40.000.000	Rp40.000.000	4%	20 Tahun
Feed mixer machine	1	buah	Rp36.000.000	Rp36.000.000	4%	20 Tahun
Hoe	5	buah	Rp100.000	Rp500.000	0%	20 Tahun
Shovel	5	buah	Rp50.000	Rp250.000	0%	20 Tahun
Arco	5	buah	Rp300.000	Rp1.500.000	0%	20 Tahun
Dipper	5	buah	Rp20.000	Rp100.000	0%	20 Tahun
Tub	5	buah	Rp50.000	Rp250.000	0%	20 Tahun
Boots	5	buah	Rp100.000	Rp500.000	0%	20 Tahun
Total Overall Construction Asset Cost				Rp937.167.960	100%	Rp46.858.398/Year

Source: Secondary data, 2025.

The details in table 2 above show that the construction cost in the PSBI for this project amounts to Rp937,167,960.00 with an annual depreciation of Rp46,858,398. The expenditures in the table are divided into two main categories: building construction (infrastructure) and cattle pen equipment procurement. The largest component in the construction costs is the building of two cattle pens measuring 15 meters x 6 meters with a capacity of 10 cattle each. The cost of building the pens in this asset is Rp490,141,360 or 52% of the total cost. Furthermore, warehouse construction contributes Rp157,426,600 or 17% of the total cost, followed by Silo Construction (Rp75,000,000, or 8% of total cost), Biogas Construction (Rp45,000,000, or 5% of total cost), and worm bin construction at Rp15,000,000 or 2% of the total cost.

Besides infrastructure construction, procurement of pen equipment is also an important part of program implementation. Some of the main equipment that has a significant portion of the total cost includes Loadcell and cattle weighing monitor (Rp14,000,000 or 1% of total cost), Cattle scale (squeeze box) (Rp54,000,000, or 6% of total cost), Chopper machine (Rp40,000,000, or 4% of total cost), and Feed mixer machine (Rp36,000,000, or 4% of total cost). Meanwhile, small equipment such as hoes, shovels, and boots have smaller contributions to the total cost, with each less than 1%.

Each asset in the table has a depreciation period of 20 years, which means the annual depreciation (decrease in asset or currency value) for all assets reaches Rp46,858,398. This depreciation is important to consider the future value of assets as well as budget planning for maintenance and equipment replacement. With these details, the table provides a comprehensive picture of the initial investment required and the estimated asset depreciation in the long term.



Figure 3. Communal-Type Cattle Housing with Capacity for 10 Cattle from the PSBI Program

Source: Personal Documentation



Figure 3. Communal-Type Cattle Housing with Capacity for 10 Cattle from the PSBI Program

Source: Personal Documentation



Figure 5. Feed Storage Warehouse

Source: Personal Documentation



Figure 7. Digital Weighing Equipment with Load Cell for Monitoring Cattle Growth

Source: Personal Documentation



Figure 6. Earthworm Cultivation System for Organic Waste Processing in the Livestock-Plant Integration System

Source: Personal Documentation



Figure 8. Location of Cattle Housing within An-Nur II Islamic Boarding School Malang Environment

Source: Personal Documentation

Profit and Loss Analysis

Production Cost

Costs incurred during the production process are called production costs, which consist of two types, namely fixed costs and variable costs (Hartono, 2012). Fixed costs are costs that are not affected by the number of livestock populations, such as cage construction depreciation costs, labor, electricity, and other infrastructure needs. Unlike fixed costs whose values will be the same every year, variable costs are expenditure costs that are affected by the number of livestock populations. The variable costs incurred by large and small livestock businesses depend on the scale of production, such as seed costs, feed costs, health costs, maintenance costs, and electricity costs for lighting (Hartono, 2012). Variable costs have values that change every year, because they adjust to the number of livestock populations during the maintenance period.



b. Total Cost of 8 Cattle

Table 3. Total Cost of Raising 8 Cows

Details	Quantity	Unit	Unit Price	Total Price	Persentase
Fixed Costs					
Cage Depreciation/period				Rp13.016.222	7,55%
Labor				Rp275.200	0,16%
Electricity				Rp28.667	0,02%
PBB/Year				Rp16.667	0,01%
Variable Costs					
Purchase of Feeder Cattle	8	ekor	Rp19.587.500	Rp156.700.000	90,86%
Forage	12927	kg	Rp400	Rp1.864.800	1,08%
Concentrate	118	kg	Rp3.000	Rp354.000	0,21%
Vitamins and medicines				Rp216.000	0,13%
Total Biaya				Rp172.471.555	100%

Source: Processed primary data, 2025

Based on Table 3, the total cost incurred in the fattening business of 8 beef cattle by An-Nur II Islamic boarding school business unit reached Rp172,471,555, with the largest contribution being the purchase of feeder cattle at Rp156,700,000 or 90.86% of the total cost. This shows that the initial capital for purchasing cattle is very dominant in the cost structure of the fattening business. The feeder cattle came from animal markets and local farmers in Malang and Pasuruan Regencies. Of the 8 cattle obtained, 1 was from Malang Regency and seven were from the Pasuruan area. The purchase of feeder cattle was carried out according to SOPs and accompanied by a team of experts from the Faculty of Animal Science, Brawijaya University.

The pen depreciation cost amounted to Rp13,016,222/period (42 days) or accounted for 7.55% of the total cost with a maintenance period of 42 days, and labor costs calculated at Rp800/head/day. On the other hand, variable costs in this business including forage feed (Rp1,864,800 or 1.08%), concentrate (Rp354,000 or 0.21%), and vitamins and medicines (Rp216,000 or 0.13%), contributed less than 2% of the total cost. This shows that operational costs other than purchasing feeder cattle are relatively low, so efficiency in feed management and animal health can increase profit margins.

c. Business Revenue

The revenue obtained in the cattle fattening business by An-Nur II Islamic Boarding School is carried out by selling cattle and not selling manure, because manure is used in an effort to integrate crops and livestock through worm media as organic fertilizer.

Table 4. Business Revenue of 8 Cattle

Cattle	Purchase Date	Purchase Price	Sale Price	DOF (hari)
1	05/05/2024	Rp17.200.000	Rp20.200.000	43
2	06/05/2024	Rp21.000.000	Rp24.000.000	45
3	07/05/2024	Rp20.500.000	Rp23.500.000	45
4	08/05/2024	Rp18.000.000	Rp21.000.000	40
5	01/05/2024	Rp18.500.000	Rp22.000.000	47
6	05/05/2024	Rp19.000.000	Rp22.500.000	44
7	12/05/2024	Rp22.000.000	Rp25.000.000	38
8	15/05/2024	Rp20.500.000	Rp23.500.000	36
Average		Rp19.587.500	Rp22.712.500	42,25
Total Revenue		Rp181.700.000		

Source: Secondary data (2025)



Based on the business revenue data for maintaining 8 cattle, the average purchase price is Rp19,857,500/head, while the average selling price reaches Rp22,712,500/head. This shows an increase in sale value of Rp2,855,000 per head in the maintenance period. The average length of cattle maintenance (Days on Feed/DOF) is 42.25 days, with the shortest duration being 36 days and the longest 47 days. This difference in maintenance period reflects a variation in growth and readiness of cattle to be sold.

Overall, the total revenue from the sale of 8 cattle reached Rp181,700,000. In the first period, cattle sales were carried out during Eid al-Adha with 6 of them sold to parents of students and 2 of them sold to cattle traders. This data shows that the cattle maintenance business can provide profits in a relatively short time. The success of this business is highly dependent on efficiency in feed management, animal health, and selection of feeder cattle with competitive purchase prices. In addition, optimization of maintenance strategies, such as balanced feeding and good health management, can increase cattle weight more optimally and increase profit margins.

d. Profit

Table 5. Profit Business

Description	Amount
Revenue from Sale of 8 Cattle	Rp181.700.000
Total Production Cost	Rp172.471.555
Income	Rp9.228.445

Source: Processed primary data, 2025

Table 6. shows the income obtained from the fattening business of 8 cattle. Based on this table, it can be seen that the total revenue obtained from the sale of beef cattle reached Rp181,700,000. Meanwhile, the total production cost incurred for the process of maintaining and fattening cattle until ready for sale is Rp172,471,555. Thus, the income or gross profit obtained from this business is Rp9,228,445, which is the difference between total revenue and total production cost. Although this business still generates profit, the profit margin is relatively small when compared to total revenue, so cost efficiency efforts or strategies to increase selling prices need to be made so that this business is more profitable.

According to Rusdiana (2016), the net profit of beef cattle farmers on a scale of 4-6 head/farmer is around Rp.1,048,066/year/farmer, B/C ratio value 0.17, the net profit of PO male beef cattle farmers on a scale of 3 head/farmer is Rp.5,464,000/year/farmer B/C ratio value 1.3, and, the net profit of beef cattle farmers on a scale of 7-10 head/farmer is Rp3,705,159/year/farmer, beef cattle socially have a fairly good economic value for farmers.

Break Even Point (BEP) Analysis

In evaluating the economic feasibility of the cattle fattening business at An-Nur II Islamic Boarding School, Break Even Point (BEP) analysis becomes one of the important indicators to determine the operational break-even point. According to Sudana (2011), BEP is the point where total revenue equals total cost, so the company experiences neither profit nor loss. Comprehensive BEP analysis can be the basis for strategic decision-making in livestock business (Ningsih et al., 2017).

BEP analysis according to Kasmir (2018) is divided into two types: Price BEP, which shows the minimum selling price per unit of product, and Production BEP, which indicates the minimum number of products that must be sold. This aligns with research by Widiyaningrum (2016) stating that BEP is a very important analytical tool for evaluating the feasibility of small and medium-scale livestock businesses.

Table 6. Business Revenue of 8 Cattle

BEP Price (IDR)	Rp21.558.944
BEP Unit (Head)	8

Source: Processed primary data, 2025

Break Even Point (BEP) analysis table provides critical financial threshold data for the cattle fattening operation at An-Nur II Islamic Boarding School. With a BEP Price of Rp21,558,944, this represents the minimum selling price per head required for the



business to cover all costs without generating profit or loss - essentially the point where total revenue equals total expenses. The BEP Unit figure of 8 cattle indicates that the operation must sell at least 8 cattle at the current market price to reach the break-even point. Since the current operation involves exactly 8 cattle, this suggests the business is operating at a minimal viable scale with little margin for error - any reduction in the number of cattle sold would result in losses.

Business Feasibility Analysis

The following presents a business feasibility analysis showing the profitability of cattle farming operations. This analysis includes a comparison between revenue, production costs, and relevant financial ratios to evaluate the success of the business venture.

Table 7. Business Feasibility Analysis

Description	Amount
Revenue from Sale of 8 Cattle	Rp181.700.000
Total Production Cost	Rp172.471.555
R/C Ratio	1,08
B/C	0.05

Source: Processed primary data, 2025

In this table, R/C Ratio of 1.08 indicates that for every rupiah invested, the operation returns 1.08 rupiah, confirming that the business is profitable, albeit with a narrow 8% margin. This modest profitability is further illustrated by the B/C Ratio of 0.05, showing that the net profit represents only 5% of the total investment. Based on this value, it means that the business provides a return on capital and provides a profit, but with the number of livestock being 8 cattle, the margin obtained is still not optimal.

Business Projection Analysis

Forecasting is a systematic business forecasting method to estimate the most likely results to be obtained in the future. This process is carried out through rational assessment and calculation based on existing facts. The main function of forecasting is to provide information as a basis for consideration in decision making. Forecasting preparation is carried out based on available data and conditions (Ilyas, 2019).

An-Nur II Islamic Boarding School has great potential in the production of feed crops thanks to the availability of extensive land. This allows for business cost efficiency while opening up opportunities as an additional source of income through the sale of forage to other farmers. Based on field observations, a land area of 2 hectares has been utilized for the cultivation of elephant grass (*Pennisetum purpureum*) as animal forage feed.

In this analysis, a comparison is made between two scenarios of maintaining 20 cattle: purchasing forage from external sources versus utilizing their own land for forage production. This scenario differentiation is important to assess the potential for cost savings and the effectiveness of available resource utilization. By considering the projected costs of both scenarios, the best approach can be determined to maximize profits and sustainability of the cattle fattening business at the pesantren. This analysis considers the amount of feed based on the maintenance phase to optimize livestock growth by taking into account the Dry Matter (DM) contained in forage and concentrate.

The maintenance phases are as follows:

- On days 1-3: Reconditioning Phase, DM requirement 2% Body weight; livestock are given 100% forage
- On days 4-7: Starter phase, DM requirement 2% Body weight; livestock are given 90% forage and 10% concentrate
- On days 8-39: Grower Phase, DM requirement 2.25% Body weight; livestock are given 80% forage and 20% concentrate
- On days 40-49: Grower Phase, DM requirement 2.75% Body weight; livestock are given 80% forage and 20% concentrate
- On days 50-90: Grower Phase, DM requirement 3% Body weight; livestock are given 80% forage and 20% concentrate
- On days 50-90: Finisher Phase, DM requirement 3% Body weight; livestock are given 70% forage and 30% concentrate

The projection has considered several things, including:

- Maintenance period (Days on Feed/DOF) of 100 days
- Target body weight gain of 123.1 kg per head, or ADG (Average Daily Gain) of 1.23 kg/day/head

- Calculation results show that elephant grass (*Pennisetum purpureum*) plants covering an area of 2 hectares can meet the needs of 144 cattle/day (with a requirement of 21.73 kg/head/day)
- Cattle concentrate requirements average 5.26 kg/head/day
- Revenue based on multiplication of cattle live weight with the selling price of cattle live weight = Rp48,000/kg
- Intensive weighing is carried out to monitor cattle weight

Below is a table of projected total maintenance costs by considering nutritional needs to optimize body weight growth.

Table 8. Projection of Total Maintenance Cost for 20 Cattle with Purchasing Forage Feed

Details	Quantity	Unit	Unit Price	Total Price	Percentage
Fixed Costs					
Cage Depreciation/100 days				Rp13.016.222	2,86%
Labor				Rp640.000	0,14%
Electricity				Rp73.000	0,02%
PBB/Year				Rp16.667	0,00%
Variable Costs					
Purchase of Feeder Cattle	20	ekor	Rp19.587.500	Rp391.750.000	86,19%
Forage	43460	kg	Rp400	Rp17.384.000	3,82%
Concentrate	10520	kg	Rp3.000	Rp31.560.000	6,94%
Vitamin dan Medicines				Rp54.000	0,01%
Total Cost				Rp454.493.888	100%

Source: Processed primary data, 2025.

Table 9. Business Feasibility Analysis on Projection Scenario with Purchasing Forage Feed

Details	Total
Revenue	Rp509.926.000
Profit	Rp55.432.112
BEP Price	Rp22.724.694
BEP Unit	19
R/C	1,12
B/C	0,12

Source: Processed primary data, 2025.

In the first scenario, with the purchase of forage from outside sources, the total maintenance cost for 20 cattle reaches Rp454,493,888. Of this amount, 86.19% comes from the purchase of feeder cattle, which is the largest cost component in the cattle fattening business. Additionally, the cost of forage that must be purchased reaches Rp17,384,000, or 3.82% of the total cost, which becomes an additional factor in operational expenditure. Other cost components, such as concentrate (6.94%) and pen depreciation (2.86%), also contribute to the total cost structure. Dependence on forage feed from outside adds a significant operational burden that can affect business efficiency. Moreover, fluctuations in the price of forage purchased from outside can also be a risk to the long-term sustainability of the cattle fattening business.

By estimating a weight gain of 123.1kg/head and a live selling price of Rp48,000/kg, the estimated selling price of cattle is Rp25,496,300/head. This business can break even by selling 19 cattle, with a break-even point (BEP Price) of Rp22,724,694/head. This means that the higher the selling price, the greater the profit from the business. With an estimated selling price of Rp25,496,300/head, the profit gained from selling 20 cattle is Rp55,542,112 or Rp2,771,606/head. The business feasibility analysis in this scenario produces an R/C ratio of 1.12 and a B/C ratio of 0.12.



Table 10. Projection of Total Maintenance Cost for 20 Cattle Without Purchasing Forage Feed (Utilizing feed crop land)

Details	Quantity	Unit	Unit Price	Total Price	Percentage
Details					
Fixed Costs				Rp13.016.222	2,98%
Cage Depreciation/period				Rp640.000	0,15%
Labor				Rp73.000	0,02%
Electricity				Rp16.667	0,00%
PBB/Year					
Variable Costs	20	ekor	Rp19.587.500	Rp391.750.000	86,62%
Purchase of Feeder Cattle	-	kg	-	-	0%
Forage	10520	kg	Rp3.000	Rp31.560.000	7,22%
Vitamins and Medicines				Rp54.000	0,01%
Total Cost				Rp437.109.888	100%

Source: Processed primary data,2025.

Table 11. Business Feasibility Analysis on Projection Scenario Without Purchasing Forage Feed

Details	Total
Revenue	Rp509.926.000
Profit	Rp72.816.112
BEP Price	Rp21.855.494
BEP Unit	18
R/C	1,17
B/C	0,166585368

Source: Processed primary data, 2025

Based on the data in Table 10 and Table 11, the maintenance cost projection for 20 cattle shows a significant difference when using forage purchased from external sources compared to utilizing one's own land. The average fresh forage required is 21.8 kg/head/day, while the concentrate requirement is 5.26 kg/head/day. In the second scenario, where the forage is produced in-house without external purchases, the total maintenance cost is lower, amounting to IDR 437,109,888. The savings achieved are IDR 17,384,000, or about 4% of the total cost compared to the previous scenario. The main difference in this scenario is the absence of forage purchase costs, significantly reducing the expenditure burden. Although there is still a cost for the concentrate feed, which is 7.22% of the total cost, the reduction in forage costs has a positive impact on the financial efficiency of the business. Additionally, by utilizing one's own land, the quality of forage can be better controlled, and its availability becomes more stable compared to relying on external suppliers, making the cattle fattening business more efficient and sustainable. In this scenario, if the cattle are sold for IDR 25,496,300/head, the breakeven point (BEP) would be achieved by selling 18 cattle. This would result in a more significant profit compared to the projection in the first scenario, which has a BEP of 19 cattle. The profit obtained in this scenario, if all the livestock are sold, is IDR 72,816,112, or IDR 3,640,806/head. The business feasibility analysis for this scenario is higher, with an R/C ratio of 1.17 and a B/C ratio of 0.16.

Challenges In The Maintenance System

Although this program shows great potential, its implementation is not without various operational challenges that need to be addressed. One of the constraints encountered is the limited availability of livestock forage, which has not grown optimally, considering that the planting time is close to the cattle fattening period. This has led the management to purchase forage from external sources. This situation can be overcome by focusing on land management and maintaining the nutritional needs of the plants to ensure a sustainable supply of feed.



Another technical challenge lies in the feeding practices, which are still based on subjective estimations by the farm staff, without accurate measurements of quantity. This approach risks causing an imbalance in the livestock's nutrient intake, either deficient or excessive, which impacts growth performance and economic efficiency. Standardizing feeding practices with the right portioning system is an urgent need to improve production efficiency and maximize livestock growth potential. Implementing a consistent measurement system can help optimize feed usage and minimize resource waste.

Another weakness identified is the monitoring system of the cattle's body weight, which is not intensive or regular. The irregularity in weight measurements creates difficulties in evaluating the growth patterns of the livestock systematically and accurately. This results in an inability to adjust the feeding strategy according to the growth phase and individual livestock needs. Developing a more stringent and regular body weight monitoring system is crucial to determine the optimal feeding pattern, evaluate the effectiveness of the management system, and identify the right harvesting time to maximize the optimal selling price. These challenges, if addressed well, could become opportunities to significantly improve the efficiency and profitability of the cattle fattening program in the Islamic boarding school.

Theoretical And Practical Implications

This research enriches the theory of Islamic boarding school (pesantren) economic development through a sustainable agriculture approach, integrating Islamic microeconomics and corporate social responsibility (CSR) practices. The approach demonstrates how these concepts can be concretely implemented at the community scale. The application of mixed crop-livestock systems in the pesantren environment provides empirical evidence for integrated farming theory as proposed by Herrero, et al. (2010), while also showing the relevance of Islamic economic principles in pesantren agribusiness practices. The results show an increase in the R/C ratio from 1.08 to 1.17 by optimizing land use for animal feed crops. The integrated farming system also proves to be an effective approach to improve production efficiency, reduce waste, and strengthen local food security. Practically, these findings present a livestock business model that can be replicated in other pesantren. The collaboration between Bank Indonesia and the Faculty of Animal Science at Universitas Brawijaya exemplifies stakeholder synergy in community-based economic development.

CONCLUSION

The integrated livestock farming model with a mixed crop-livestock system developed at Pondok Pesantren An-Nur II Malang represents a smart investment in sustainable food production. The economic analysis results show that although the business is profitable with an R/C ratio of 1.08, optimization is still needed through the standardization of feed delivery and more stringent body weight monitoring. To expand the impact of this model, several strategies can be implemented, such as developing a digital platform for livestock growth monitoring, feed management, and diversifying by-products such as premium compost, commercial biogas, and processed beef-based food products. Further research is needed to assess the economic efficiency of the cattle fattening model in various pesantren, evaluate the long-term impact of Bank Indonesia's CSR program on the economic independence of pesantren, analyze the ecological sustainability of the crop-livestock integration system on a larger scale, and develop mathematical models for optimizing feed delivery based on livestock growth phases. Through the implementation of these recommendations, the cattle fattening model in pesantren will not only improve the economic welfare of the pesantren community but also significantly contribute to national food security and the development of Islamic economics in Indonesia.

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