

Implementation of Activity-Based Costing in a Goat Farming Enterprise to Support Food Security at an Islamic Boarding School

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Article History

Received on 07 October 2025

1st Revision on 08 October 2025

2nd Revision on 04 July 2026

Accepted on 24 August 2026

Abstract

Purpose: This community service program was designed to address the absence of a structured, activity-based cost accounting system in the goat farming enterprise operated by Pondok Pesantren Darul Iman, a decision gap that left the boarding school unable to determine an accurate cost of goods sold, set a rational selling price, or evaluate the profitability of its livestock unit as a pillar of internal food security.

Research Methodology: The team applied a participatory community service design combining a situational assessment, digital pretest and posttest evaluation, interactive lectures, hands-on Activity-Based Costing (ABC) training, and a structured cost-tracing exercise that classified feed, labor, veterinary, transportation, and livestock-purchase expenditures into cost pools linked to goat-day and per-head cost drivers, followed by a continuity and monitoring plan.

Results: Applying the ABC framework to 120 goats over a ten-month rearing cycle produced a cost of goods sold of approximately IDR 1,933,214 per goat, dominated by livestock purchase and labor costs, and a gross margin of about 22.7%, equivalent to roughly Rp566,786 per head at a selling price of IDR 2,500,000.

Conclusions: The intervention increased participants' technical and managerial capacity to calculate accurate production costs, information that supports the pesantren's pricing decisions and its broader food security and economic independence agenda.

Limitations: The costing exercise relied on a single production cycle and on simplifying assumptions regarding mortality, shared facility costs, and depreciation.

Contributions: The study offers a replicable ABC costing template for faith-based agribusiness units operating under resource constraints in rural community settings.

Keywords: *Activity-Based Costing, Cost of Goods Sold, Food Security, Goat Farming, Islamic Boarding School*

How to Cite: Ayin, M. A. S., Makhsun, A., Trihatmaja, S. P., & Wisesa, P. (2026). Implementation of Activity-Based Costing in a Goat Farming Enterprise to Support Food Security at an Islamic Boarding School. *Yumary: Jurnal Pengabdian kepada Masyarakat*, 7(1), 39-52.

1. Introduction

1.1 Situational Analysis

Pondok Pesantren Darul Iman is located in Dusun Umbul Kates, Tanjung Sari Village, Natar Subdistrict, South Lampung Regency, and is managed under the Udjang Syahrir Foundation. The institution focuses on producing santri, or students, who are proficient in Quranic memorization and jurisprudence while also possessing communication skills and entrepreneurial independence as can be seen in Figure 1. Consistent with the broader mission of Islamic boarding schools in Indonesia, Darul Iman treats economic self-reliance as inseparable from its religious and educational mandate, a position that resonates with the argument that pesantren institutions occupy a strategic position for community-based economic empowerment because of their proximity to grassroots society and their capacity to mobilize collective, faith-based solidarity toward productive ends ([Muzakki, 2016](#); [Khozin, 2020](#)).



Figure 1. Santri performing Quranic memorization activities.

To support internal food resilience and to strengthen economic independence, Darul Iman utilizes approximately two hectares of land for productive agricultural and livestock activities. As household and institutional food security increasingly depends on the ability of communities to generate their own protein and staple supplies rather than relying solely on external markets, pesantren-based agribusiness has been identified in the literature as a credible vehicle for translating land assets into nutritional and economic outcomes ([Nurhadi, 2023](#); [Muryani et al., 2021](#)). Within this context, goat farming was selected as a strategic activity because it produces meat as a protein source for santri consumption, generates organic fertilizer from livestock waste, and allows the reuse of agricultural residues such as banana leaves and stems as feed, thereby closing a productive loop between the pesantren's crop and livestock units.

As the boarding school's ambition for food and economic independence grew, the potential to scale the goat enterprise became an attractive strategic option. Yet raising livestock at scale for internal consumption and limited commercial sale introduces cost complexity that a small, faith-based institution is not always equipped to manage. Goat enterprises operated by smallholders and community institutions typically face volatile feed prices, labor scheduling constraints, and uncertain margins, and profitability in such enterprises has been shown in comparative agricultural economics research to hinge on how precisely feed, labor, and mortality-related costs are tracked and allocated ([Slavova, 2024](#)). Without a disciplined costing method, an institution can expand a livestock unit while remaining unaware of whether that unit is actually generating a surplus.

1.2 Activity-Based Costing as a Solution

For the goat enterprise to operate efficiently, transparently, and sustainably, an accurate and informative production cost calculation system is required. A traditional system that merely accumulates costs in aggregate is no longer adequate for intelligent and strategic decision making. Traditional volume-based costing tends to spread indirect costs uniformly across products or units regardless of how much each unit actually consumes particular activities, which can distort the true cost of a specific product and, in turn, mislead pricing and resource allocation decisions ([Hansen & Mowen, 2018](#)). Activity-Based Costing, commonly abbreviated as ABC, was developed to correct this distortion by tracing overhead and indirect costs to the specific activities that consume resources and then assigning those activity costs to cost objects according to their actual usage of cost drivers ([Kaplan & Anderson, 2007](#)).

ABC is especially valuable in operating environments where overhead costs are high and where different products or units consume shared activities in different proportions, a condition that is common in agricultural and livestock enterprises where feed, labor, and transportation are shared across an entire herd rather than incurred separately for each animal ([Hansen & Mowen, 2018](#)). By identifying the actual activities involved in production, from feeding and health maintenance to transportation and labor deployment, and by assigning costs based on the intensity with which each activity is consumed, ABC produces a more precise estimate of the cost of each unit than aggregate or volume-based methods can achieve ([Kaplan & Anderson, 2007](#)). Systematic reviews of the ABC literature confirm that after more than three decades of academic and practical development, the method remains one of the most widely recommended approaches for improving costing accuracy across manufacturing, service, healthcare, and increasingly, small and medium enterprise settings.

Empirical studies of ABC implementation in small and medium enterprises show a consistent pattern: firms that adopt ABC gain a clearer view of which activities actually drive cost, which in turn improves pricing decisions, cost control, and ultimately financial performance ([Paradzai et al., 2023](#); [Nartey, 2025](#)). At the same time, the literature also documents that ABC adoption in small organizations and non-profit institutions frequently encounters obstacles related to limited human resources and the absence of an existing culture of activity-based cost recording ([Yuliansyah & Razimi, 2019](#)). A structured literature review of ABC applications across manufacturing, service, and micro, small, and medium enterprises in Indonesia similarly found that while ABC is technically applicable across sectors, its successful adoption depends heavily on the availability of trained personnel who understand how to define cost pools and select appropriate cost drivers ([Nasution et al., 2021](#)). These findings directly informed the design of the present community service program, which combined technical ABC training with hands-on cost-tracing practice rather than relying on lecture-based instruction alone.

ABC is a costing method that calculates the cost of a product or service based on the activities consumed during the production or operational process. In this method, indirect costs, or overhead, are allocated to products or services more accurately, based on the actual use of the activities that generate those costs, known as cost drivers. This logic is directly transferable to livestock production, where feed consumption, labor hours, veterinary attention, and transportation for feed collection are all activities whose intensity varies with the size of the herd and the length of the rearing period rather than being fixed regardless of scale ([Nguyen, 2023](#); [Kefe & Taniş, 2023](#)).

1.3 Priority Problems Facing the Partner

Pondok Pesantren Darul Iman, like many other pesantren, is striving to achieve economic independence and food security through the use of internal land and resources. One of the activities being developed is the goat farming enterprise, which has the potential to make a significant contribution to providing animal protein for santri consumption and to generating economic opportunity for the pesantren. Pesantren institutions in general have been argued to hold considerable potential to become centers of grassroots economic empowerment precisely because of their embeddedness in local community life, their capacity to build economic solidarity anchored in shared spiritual values, and their ability to operate business units such as livestock, agriculture, and student cooperatives as sources of independent income that simultaneously reinforce food security and local economic sovereignty ([Muzakki, 2016](#); [Khozin, 2020](#)). Innovation and entrepreneurship education

within the pesantren environment has likewise been emphasized as a strategy for responding to modern economic challenges, since pesantren that actively cultivate entrepreneurial santri tend to produce graduates who are more economically self-reliant after leaving the institution ([Hafidz & Lubis, 2018](#)).

In practice, however, several interlocking problems undermine the effectiveness and sustainability of the goat enterprise at the partner pesantren. The most fundamental of these is the absence of a structured cost recording system. Financial management of the livestock enterprise has so far been handled in a simple manner, often without complete and detailed cost documentation. This gap leaves managers unaware of the real cost of raising a single goat, makes it difficult to set a fair and profitable selling price, and prevents the pesantren from distinguishing value-adding activities from wasteful, non-value-adding ones.

A closely related problem is the inefficient allocation of resources. Without activity-based cost information, the use of feed, student labor, veterinary medicine, and pen maintenance cannot be effectively controlled, which results in oversupply or shortage of feed, suboptimal working time during maintenance activities, and unnoticed operational waste. A third problem is the difficulty of evaluating the performance and sustainability of the livestock enterprise, since the pesantren has no system that links daily activities to the costs those activities generate, making it hard to determine whether the enterprise is profitable or loss-making and, consequently, difficult to hold the enterprise managerially accountable. Underlying all of these issues is a fourth and more foundational problem: a lack of understanding, among both administrators and santri, of modern cost management approaches such as ABC that are more appropriate and relevant than traditional systems for professionalizing livestock management, identifying the activities that consume the most cost, and improving accountability and transparency in the management of the pesantren's business units. As can be seen in Figure 2.



Figure 2. The goat farming enterprise operated within the pesantren compound.

The broader literature on ABC implementation corroborates the specific difficulties observed at the partner site. Implementation of the ABC method often encounters obstacles in small organizations and non-profit institutions because of limited human resources and the absence of an existing culture of activity-based cost recording ([Yuliansyah & Razimi, 2019](#)). This observation squarely matches the condition found at Darul Iman, where neither the pesantren's administrative staff nor the santri directly involved in the livestock unit had previously received structured training in cost accounting. These interlocking problems constituted the core challenges faced by the partner and were the basis on which the partner approached the community service team from Politeknik Negeri Lampung to help identify and resolve them collaboratively. As can be seen in Figure 3.



Figure 3. Goats reared within the pesantren's livestock unit.

Pondok Pesantren Darul Iman has a substantial population of santri and administrators, indicating strong potential for further growth. This adequate human resource base can help the pesantren move in a more productive direction if it receives appropriate training and guidance from a competent and professional team, particularly knowledge related to the implementation of the Activity-Based Costing method. Through such training and mentoring, the community service team is confident that it can help improve the welfare and independence of the pesantren community and the surrounding society through a food-security strategy anchored in goat farming.

National food security policy in Indonesia has increasingly emphasized local, community-driven production as a complement to centralized supply chains, since implementation studies show that top-down food security programs alone struggle to reach institutions at the scale of a single pesantren without locally embedded productive units ([Muhafidin, 2022](#)). Sustainable food security strategies that rely on productive local resources rather than external dependency have consistently been linked in the international literature to stronger household and institutional resilience, particularly where organic and low-input production systems are combined with sound economic management ([Gamage et al., 2023](#)). Because pesantren institutions manage land, labor, and communal resources that are structurally similar to smallholder farming households, they represent a promising but underexamined unit of analysis for food security and economic resilience research, especially where religious institutions intersect with rural agribusiness ([Rofiah et al., 2025](#)). By managing goat farming and processing garden produce such as bananas using an effective cost management approach like ABC, the pesantren is able to generate higher value-added products while maintaining cost efficiency and transparency, benefits that can then be reinvested into pesantren operations, the welfare of santri and administrators, and the creation of a self-sustaining economic cycle.

Success in this initiative would demonstrate that a pondok pesantren can become a model of community-based food security while simultaneously operating as a competitive productive economic unit. With the right development strategy, a pesantren can serve not only as a center for spiritual and moral formation but also as a sustainable source of income for the welfare of its community, a proposition consistent with findings that sustainable food systems spanning production, processing, and marketing are central to achieving durable food security outcomes at the local level ([Mensah et al., 2023](#); [Fernandes & Samputra, 2022](#)).

2. Research Methodology

This community service program was carried out in partnership with Pondok Pesantren Darul Iman, located in Tanjung Sari Village, Natar Subdistrict, South Lampung Regency. The primary targets of the activity were the pesantren's administrators and santri, particularly those directly involved in the goat farming enterprise. The implementation team consisted of lecturers and staff from Politeknik Negeri Lampung, organized around a structured, multi-stage design centered on the implementation of the Activity-Based Costing method as a means of supporting operational efficiency in the livestock enterprise as part of the pesantren's food security program. This staged design follows conventional community-engagement practice in which a technical intervention is preceded by a needs

assessment and followed by a monitoring and evaluation phase, an approach that has been shown to improve the durability of behavior change produced by short-term training interventions ([Nasution et al., 2021](#)).

The initial stage consisted of preliminary assessment and permit processing. Early activities included an approach to the foundation's leadership and pesantren administrators to communicate the objectives and benefits of the program. In addition, the team processed the necessary activity permits and collected preliminary data on the condition of the existing goat farming enterprise operating within the pesantren environment.

The second stage focused on education about the importance of cost efficiency in the goat farming enterprise. This stage began with a pretest administered through a digital questionnaire using Quizizz, designed to measure participants' initial level of understanding of livestock cost management and their awareness of the importance of operational efficiency in supporting food security. This was followed by interactive counseling and lectures covering the concepts of cost, cost efficiency, and livestock-based food security, delivered using a simple approach relevant to the pesantren context. The stage concluded with a posttest evaluation to measure the effectiveness of the counseling and the improvement in participants' understanding, a design consistent with quasi-experimental one-group pretest-posttest evaluation commonly used to assess short-term knowledge gains from community training interventions ([Nasution et al., 2021](#)).

The third stage comprised training and implementation of the Activity-Based Costing method itself. This stage began with an introduction to the basic concepts of ABC, explaining its definition, benefits, and differences from traditional methods in determining the cost of livestock production. Participants were then guided to identify the main activities in the goat farming enterprise, such as feeding, pen maintenance, vaccination, and the sale of livestock outputs. The training proceeded to the determination of cost drivers and the allocation of activity costs, in which participants practiced constructing cost pools, calculating cost driver rates, and allocating costs to each identified activity. The stage concluded with a simulation of the cost of goods sold calculation for a single goat, in which participants worked directly with data from the pesantren's own enterprise.

The fourth stage addressed marketing education and financial record keeping for the livestock enterprise. Sub-activities included an introduction to digital marketing strategies for livestock products through WhatsApp, online marketplaces, and social media, in which participants were introduced to modern marketing channels and to methods of presenting the sale value of livestock effectively, as well as training in simple, activity-based financial record keeping to help the pesantren implement a bookkeeping system that is both simple and accurate for periodic business evaluation. Simple, structured bookkeeping has repeatedly been shown in the small enterprise literature to be a precondition for sound financial decision making, since owners and managers cannot control costs they do not systematically record ([Damayanti et al., 2021](#); [Bawono et al., 2022](#); [Putra et al., 2024](#)).

The fifth and final stage consisted of a program continuity, monitoring, and evaluation plan. After the program was implemented, the community service team planned ongoing mentoring to monitor the implementation of the ABC method and the sustainability of the enterprise. The team committed to conducting monthly field visits during the first three months following the intervention, providing further training as needed, and preparing a final report and seminar to disseminate the results of the community service activity. As can be seen in Figure 4



Figure 4. Group photograph with santri and pesantren administrators following the training session.

3. Results and Discussion

3.1 Partner Condition

Ponpes Darul Iman already operates a goat farming enterprise, yet several factors continue to hinder its effectiveness and sustainability. These include the absence of a structured cost recording system, inefficient allocation of resources, difficulty in evaluating the performance and continuity of the livestock enterprise, and a limited understanding of modern cost management approaches. Based on discussions between the partner and the community service team from Politeknik Negeri Lampung, training in the implementation of the Activity-Based Costing method was identified as the appropriate response. Integrating agricultural production data with an ABC-based model allows livestock managers to obtain more operational and near real-time cost information ([Žuraulis et al., 2023](#)), and through ABC training the pesantren community gained technical and managerial capability in mapping the primary and supporting activities of the livestock enterprise, in determining the cost of each activity based on relevant cost drivers such as the number of goats, quantity of feed, and labor hours, in accurately calculating the cost of goods sold per goat, and in shaping pricing strategy, activity efficiency measures, and future business development plans.

The implementation of ABC is expected to increase operational efficiency and cost control, to strengthen the pesantren's internal food security through the production of affordable and quality goat meat, and to open opportunities for pesantren economic development based on livestock entrepreneurship.

3.2 Program Implementation

Training on the implementation of the Activity-Based Costing method was delivered by the Politeknik Negeri Lampung community service team to the santri, caretakers, and administrators of Ponpes Darul Iman, providing an understanding of ABC and of the importance of knowing the cost of goods sold in order to determine the contribution margin generated by the pesantren's goat farming enterprise. ABC is recognized in the accounting literature as one of the most accurate costing systems for allocating manufacturing and operational overhead, since it produces a precise picture of overhead consumption that allows managers to determine an accurate cost of goods sold and to set a selling price that remains competitive in the market while increasing sales, profit, and cost efficiency ([Tamara et al., 2020](#)). Field research on goat farming enterprises in Banyumas similarly shows that cost efficiency is a decisive determinant of the level of profit an enterprise is able to generate, reinforcing the relevance of a disciplined costing approach for community-based livestock businesses of the type operated by Darul Iman ([Angon, 2023](#)).

The costing exercise was conducted for the goat farming enterprise of Pondok Pesantren Darul Iman in Natar, South Lampung, using an Activity-Based Costing approach applied to the following operating data. The herd consisted of 120 goats. Each animal entered the rearing cycle at an initial weight of approximately 15 kilograms and was sold once it reached 30 kilograms, representing a 15-kilogram weight gain achieved over a rearing period of ten months. For the purpose of daily and weekly cost conversion, one month was treated as 30 days, so that ten months of rearing corresponds to 300 days, or approximately 43 weeks. All 120 goats were assumed to reach market weight and to be successfully sold, with no mortality recorded during the cycle. The purchase price per goat was IDR1,000,000, recorded as a direct cost. All feed, labor, and transportation costs reported by the pesantren applied to the herd as a whole across the full ten-month period unless stated otherwise on a per-head or per-person basis, and no cage depreciation or veterinary fee was recorded beyond the vitamin expenditure already reported. The selling price per goat at 30 kilograms was set at IDR2,500,000. As shown in Figure 5 Field tracing of the goat farming enterprise's cost sources, used to classify feed, labor, transportation, and livestock-purchase expenditures during the ABC training session.



Figure 5. Field tracing of the goat farming enterprise's cost sources, used to classify feed, labor, transportation, and livestock-purchase expenditures during the ABC training session.

3.3 Cost Driver Analysis

Table 1. Cost pools and cost drivers used in the Activity-Based Costing analysis of the goat farming enterprise

Cost Component	Cost Driver	Allocation Basis
Feed (concentrate, cassava leaf, tapioca dregs)	Goat-days	Total feed expenditure allocated proportionally to the number of goats multiplied by rearing days
Vitamins	Number of goats	Periodic supplementation cost divided evenly across the herd
Labor (four caretakers)	Goat-days	Monthly wages allocated across the herd and the ten-month cycle
Feed-collection transportation	Goat-days / weekly trips	Weekly transport expenditure allocated across the herd
Livestock purchase	Per head	Direct cost charged fully to each goat purchased

Following the collection of cost source data, the training proceeded to a cost driver analysis in which each cost component was grouped into a cost pool and assigned a logical cost driver, summarized in Table 1. Feed, comprising concentrate, cassava leaf, and tapioca dregs, is consumed daily and in direct proportion to the number of goats and the length of the rearing period, so goat-days, meaning the number of goats multiplied by the number of days reared, was selected as the appropriate driver. Vitamins are administered periodically on a per-head basis, so the number of goats served as the relevant driver. Labor, covering the wages of four caretakers, serves the entire herd every day, so goat-days was again used as a fair allocation basis. Transportation for weekly feed collection likewise serves the whole herd, making goat-days an appropriate driver for that expenditure. Livestock purchase, by contrast, is a direct cost attributable to each individual animal and was therefore allocated strictly on a per-head basis.

Because all 120 goats in this cycle were reared under homogeneous conditions for an identical period, a simple goat-based allocation, in which total cost is divided by the total number of head, produces the same result as a full goat-days allocation. For future cycles involving staggered purchase dates or mixed rearing periods, however, the pesantren was advised that feed and labor costs should be allocated using goat-days specifically, since a simple per-head division would misstate the cost burden of animals reared for different lengths of time.

3.4 Cost of Goods Sold Calculation

Working from the ten-month operating cycle of 300 days, the training walked participants through the conversion of each recurring expenditure into a total cost for the herd. Concentrate feed was budgeted at IDR 30,000 per day for the herd, producing a ten-month total of IDR 9,000,000. Cassava leaf was budgeted at IDR 100,000 per seven days, producing a total of approximately IDR 4,285,714 over 300 days. Tapioca dregs were budgeted at IDR 220,000 per ton per week, producing a total of approximately IDR 9,428,571. Grass was supplied free of charge from the pesantren's own land and therefore carried no cost. Vitamins were budgeted at IDR 70,000 per month, producing a ten-month total of IDR 700,000. Labor for four caretakers was budgeted at IDR 2,000,000 per person per month, producing a ten-month total of IDR 80,000,000. Transportation for feed collection was budgeted at IDR 200,000 per week, producing a total of approximately IDR 8,571,429 over the cycle. Adding the direct livestock purchase cost of IDR 120,000,000 for the full herd of 120 goats to these recurring expenditures yields a total cost of goods sold for the herd of approximately IDR 231,985,714 over the ten-month cycle. Dividing this total by the number of goats produces a cost of goods sold of approximately Rp1,933,214 per goat, ready for sale at 30 kilograms. Table 2 present the complete component-level breakdown of this calculation, expressed both as the total cost incurred by the herd and as the cost allocated to each individual goat.

Table 2. Component-level cost of goods sold for the goat farming enterprise, herd total and cost per goat

Cost Component	Total for the Herd (IDR)	Cost per Goat (IDR)
Livestock purchase	120,000,000	1,000,000
Concentrate feed	9,000,000	75,000
Cassava leaf	4,285,714	35,714
Tapioca dregs (onggok)	9,428,571	78,571
Grass (self-supplied)	0	0
Vitamins	700,000	5,833
Labor (4 caretakers)	80,000,000	666,667
Transportation	8,571,429	71,429
Total cost of goods sold	231,985,714	1,933,214

3.5 Revenue and Margin Analysis

Table 3. Revenue, cost of goods sold, and gross margin per goat and for the full herd of 120 goats

Indicator	Per Goat (IDR)	Herd of 120 (IDR)
Selling price	2,500,000	300,000,000
Cost of goods sold	1,933,214	231,985,714
Gross profit	566,786	68,014,286
Gross margin	22.7%	22.7%

With a selling price of IDR 2,500,000 per goat and a cost of goods sold of IDR 1,933,214 per goat, the gross profit realized per animal is approximately IDR 566,786. Scaled across the full herd of 120 goats, total revenue reaches IDR 300,000,000 against a total cost of goods sold of IDR 231,985,714, yielding a total gross profit of approximately IDR 68,014,286 and a gross margin of approximately 22.7 percent. These results are summarized in Table 3.

3.6 Interpretation and Discussion

The ABC breakdown shows that the largest cost components per goat are the purchase of livestock, at IDR 1,000,000, and labor, at IDR 666,667, together accounting for approximately 86 percent of the total cost of goods sold. This finding is consistent with cost structure patterns reported elsewhere in the small ruminant literature, where labor and initial animal acquisition typically dominate the cost base of smallholder and community-scale operations far more than feed or health inputs ([Slavova, 2024](#)). Because these two components alone drive the overwhelming majority of cost, the most effective levers available to the pesantren for reducing its cost of goods sold are negotiating or selecting more cost-efficient livestock purchases and optimizing labor deployment through better scheduling and task efficiency, rather than focusing primarily on feed savings.

Combined feed costs, comprising concentrate, cassava leaf, and tapioca dregs, total approximately IDR 189,285 per goat over the ten-month cycle. Because grass is supplied free of charge from the pesantren's own land, overall feed costs remain moderate relative to labor and livestock purchase. This finding illustrates a broader principle recognized in the sustainable agriculture literature, namely that access to low-cost or self-supplied inputs, such as organically available forage, can materially improve the cost position of a livestock or farming enterprise without requiring capital investment ([Gamage et al., 2023](#)).

Transportation costs, at approximately IDR 71,429 per goat, are significant enough that meaningful savings could be achieved by improving the efficiency of feed collection trips or by reducing travel distance to feed sources. Vitamin costs, at only about IDR 5,833 per goat, have a minor impact on overall cost, yet their role in disease prevention remains important despite the small expenditure involved, underscoring that the smallest cost pool in an ABC breakdown is not necessarily the least strategically important one.

Overall, the analysis indicates that the goat farming enterprise is profitable under the assumption that the selling price remains at IDR 2,500,000 per head and that all animals are successfully sold. A gross margin of approximately 22.7% is a respectable outcome for a community-scale livestock enterprise and compares favorably with profitability benchmarks reported for smallholder goat operations in other developing-country contexts, where margins in the range of 15 to 25% are commonly regarded as commercially viable once labor and mortality risk are properly accounted for ([Slavova, 2024](#)). This outcome also lends empirical support to the proposition that pesantren-managed livestock units, when governed by an accurate costing discipline, can function as genuine economic assets rather than purely subsistence activities ([Muzakki, 2016](#); [Khozin, 2020](#)).

Beyond the numerical result, the training process itself produced an important capacity-building outcome. Participants who previously relied on an informal, aggregate view of enterprise cost left the training able to decompose the cost of a single goat into its constituent activities and drivers, a shift in managerial capability that mirrors findings from the broader ABC adoption literature showing that the primary value of ABC training in resource-constrained organizations lies as much in the analytical habits it instills as in the specific cost figures it produces ([Nasution et al., 2021](#); [Paradzai et al., 2023](#)).

This capability is directly transferable to other productive units the pesantren may develop in the future, including its banana processing activity, since the same logic of identifying activities, assigning cost drivers, and tracing overhead can be applied to any production process regardless of the specific commodity involved ([Nguyen, 2023](#)). The pattern observed here also echoes findings from other pesantren-based agribusiness programs, where structured mentoring in agribusiness management was similarly found to strengthen an Islamic boarding school's capacity for economic self-reliance ([Nasrullah et al., 2023](#)).

The results also carry direct implications for the pesantren's food security objective. By knowing precisely what it costs to raise a goat to market weight, Darul Iman is now in a position to make a deliberate decision about how many animals to allocate toward internal consumption for santri nutrition versus commercial sale to generate revenue for reinvestment, a decision that was previously made without a reliable cost baseline. This aligns with the broader argument in the food security literature that sustainable local food systems depend not only on production capacity but on the economic information needed to manage that capacity efficiently over time ([Fernandes & Samputra, 2022](#); [Kamenya et al., 2022](#); [Mensah et al., 2023](#)). Institutions such as pesantren, which combine communal land, labor, and social capital, are therefore well positioned to translate improved costing practice directly into measurable gains in both nutritional self-sufficiency and financial resilience ([Rofiah et al., 2025](#); [Hardianto & Anggriawan, 2023](#)).

At the same time, the training revealed structural constraints that will need to be addressed as the enterprise scales further. The current cost structure assumes a single, non-staggered purchase cycle with no recorded mortality, an assumption that simplifies the ABC calculation but is unlikely to hold as the enterprise grows or as animals are purchased in successive batches. Financial and technology-adoption barriers documented among small and medium enterprises in Indonesia, including limited digital record-keeping capacity, suggest that the pesantren will eventually benefit from migrating its ABC records from manual tracking to a simple digital bookkeeping tool in order to sustain the discipline introduced during this program ([Putra et al., 2024](#); [Bawono et al., 2022](#)). Evidence from small business bookkeeping research further indicates that owners who receive structured accounting mentorship, rather than a single training session, are markedly more likely to sustain improved record-keeping practices over the long term ([Chimucheka et al., 2025](#); [Hasan et al., 2024](#)), a consideration that reinforces the value of the continuity plan built into this program. Continued mentoring, of the kind planned in the monitoring and evaluation stage of this program, is therefore essential to ensure that the costing practice introduced during training becomes embedded in the pesantren's ongoing management routine rather than remaining a one-time exercise.

It is also useful to situate this result within the wider comparative literature on ABC adoption outside Indonesia. Evidence from small and medium enterprises in Zimbabwe indicates that firms adopting ABC experienced measurable improvements in financial performance once the method was properly embedded in daily operations rather than treated as a one-off costing exercise ([Paradzai et al., 2023](#)), while research on Ghanaian SMEs similarly shows that ABC adoption interacts with innovation attributes to shape firm performance, suggesting that the benefits of ABC are not purely mechanical but depend on the surrounding organizational culture of continuous improvement ([Nartey, 2025](#)). Studies of ABC implementation determinants in Vietnamese manufacturing firms further emphasize that environmental uncertainty and a market-oriented posture significantly influence how readily an organization adopts activity-based costing ([Nguyen, 2023](#)), a pattern that is plausible in the pesantren context as well, since Darul Iman motivation to adopt ABC was itself triggered by an external market signal, namely the need to set a defensible selling price for its goats. Systematic reviews spanning three decades of ABC research confirm that the method's core value proposition, more accurate cost information leading to better pricing and resource allocation decisions, remains robust across sectors as diverse as manufacturing, healthcare, and, as this program demonstrates, community-based agribusiness ([Sánchez-Rebull et al., 2023](#); [Niñerola et al., 2021](#); [Niasti et al., 2019](#)).

From a food security perspective, the significance of this program extends beyond the specific pesantren studied here. Editorial commentary on nutrition security consistently stresses that production gains alone are insufficient without complementary improvements in the economic literacy of the producers themselves, since farmers and institutional producers who cannot accurately price

their output are structurally vulnerable to being undercut in the market or to inadvertently subsidizing consumers at a loss ([Hoffmann et al., 2022](#); [Thakur et al., 2023](#)). By closing this economic literacy gap for the goat enterprise at Darul Iman, the program directly strengthens the institution's capacity to sustain its own food production system over time, rather than merely producing a temporary increase in output. This distinction between production capacity and production sustainability is central to the argument that food security interventions in agrarian and faith-based community settings should pair technical agricultural assistance with cost and financial management training as a matched pair rather than as separate, sequential interventions ([Kamenya et al., 2022](#); [Fernandes & Samputra, 2022](#)).

4. Conclusions

4.1 Conclusion

This community service program successfully introduced and implemented the Activity-Based Costing method within the goat farming enterprise of Pondok Pesantren Darul Iman. The intervention equipped administrators and santri with the technical capability to identify production activities, assign appropriate cost drivers, and calculate an accurate cost of goods sold, resolving the informational gap that had previously prevented the pesantren from setting a rational selling price or evaluating the true profitability of its livestock unit. The resulting cost of goods sold of approximately IDR 1,933,214 per goat, against a selling price of IDR 2,500,000, indicates that the enterprise generates a gross margin of about 22.7%, confirming that the business is financially viable under current operating assumptions. This goat farming enterprise therefore has real potential to become a source of economic independence for the pesantren while simultaneously supporting its food security program. Taken as a whole, the implementation of the ABC method delivered benefits that extend beyond cost calculation alone, strengthening the professionalism of livestock business management and positioning Ponpes Darul Iman to serve as a role model for other self-sufficient pesantren built on agribusiness and livestock enterprise.

4.2 Research Limitations

This program has several limitations that should be acknowledged. The cost calculation was based on a single production cycle of 120 goats reared under a uniform, non-staggered purchase schedule, so the results may not fully capture cost variation that would arise from staggered purchasing, mixed rearing periods, or seasonal feed price fluctuations. The model also assumed zero mortality across the herd, an assumption that simplifies the calculation but is unlikely to hold in every future cycle, and it did not include cage depreciation, veterinary consultation fees, or the opportunity cost of santri labor time, all of which could materially change the cost of goods sold if incorporated. Finally, because the pesantren had no prior structured cost records, the baseline figures used in the ABC exercise relied on the recall and estimation of pesantren administrators rather than on continuously logged transactional data, which may introduce a degree of measurement imprecision.

4.3 Directions and Future Study

Future work should extend the costing model across multiple rearing cycles to capture seasonal variation in feed prices and to incorporate mortality, depreciation, and veterinary costs more explicitly. Subsequent community service or research activities could also compare the ABC results obtained here with a Time-Driven Activity-Based Costing approach to assess whether a simplified, time-based variant would be easier for pesantren staff to sustain without continuous external mentoring. In addition, further study could examine how digital bookkeeping tools might be integrated into the pesantren's cost recording process to reduce reliance on manual documentation, and how the costing framework developed for the goat enterprise could be adapted to the pesantren's other productive units, such as banana processing, to build a more comprehensive activity-based management system across the institution's entire agribusiness portfolio.

Acknowledgements

The authors would like to thank Politeknik Negeri Lampung for supporting this Community Service Program through DIPA institutional funding for the 2025 fiscal year. The authors also thank the leadership and administrators of the Ujang Syahrir Foundation and Pondok Pesantren Darul Iman for their cooperation and active participation throughout the program.

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