



## Participatory Community Action

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# DEVELOPING A SUSTAINABLE BUSINESS MODEL FOR GOAT AND FISH FARMING: A COMMUNITY EMPOWERMENT PROGRAM IN RURAL JEPARA, INDONESIA

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## ABSTRACT

**Objective:** This community service program aimed to empower rural farmers in Kepuk Village, Bangsri District, Jepara Regency, through the development of an integrated business model for goat and fish farming. The objective was to enhance entrepreneurial capacity, increase productivity, and establish sustainable local business institutions that efficiently utilize local resources.

**Design & Methods:** The program adopted a participatory action research approach, combined with the Business Model Canvas (BMC) framework, to help participants identify key components of their business structure, including value propositions, customer segments, revenue streams, and cost structures. Activities included training, mentoring, and collaborative business model development involving 30 participants from two farmer groups. Data were collected through pre-test and post-test questionnaires, direct observations, and focus group discussions. The analysis focused on measuring changes in participants' entrepreneurial knowledge, productivity efficiency, and institutional collaboration.

**Result:** The findings revealed a significant improvement in participants' entrepreneurial literacy, from 46% (pre-test) to 82% (post-test). Four new locally based business models were developed: (1) organic goat farming, (2) fish farming using goat waste, (3) organic fertilizer production, and (4) an integrated goat-fish business model. The integration of these systems reduced feed costs by 18% and increased fish production by 12%. Moreover, two new collaborative business groups (Barokah Farm and Arif Farm) were successfully established, thereby strengthening the community's economic and social cohesion. The program demonstrated that participatory business model development could be an effective tool for enhancing rural economic sustainability and fostering circular economy practices in local communities.

**Keywords:** Community empowerment; Business Model Canvas; Integrated farming; Rural entrepreneurship; Circular economy.

## INTRODUCTION

Empowering rural communities is a crucial aspect of sustainable development, particularly in developing countries like Indonesia, where the majority of the population still relies on agriculture and livestock as their primary livelihoods (Ramdani, 2023). Rural economic development efforts are inextricably linked to increasing community capacity to manage local resources productively and sustainably. In this context, community service activities focused on developing business models based on local potential are a relevant strategy with a real impact (Widjaja, 2024).

Kepuk Village in Bangsri District, Jepara Regency, has significant potential for goat farming and freshwater fisheries, but it still faces various challenges in business management and development. Most residents in this village rely on traditional, small-scale farming and livestock

farming for their livelihoods. Based on initial observations and interviews with local livestock farmers, it was discovered that the goat and fish farming management systems in this area still do not apply modern business management principles. This results in low productivity, limited market access, and unstable incomes for farmers (Haque et al., 2025).

One of the main challenges faced by livestock farmers in Kepuk Village is the lack of a structured and sustainable business model. Farmers tend to run their businesses based on inherited experience rather than a clear strategic plan. However, in the face of market changes and dynamic consumer needs, implementing an adaptive and innovative business model is crucial for business sustainability (As Shoib, 2025). A good business model encompasses not only production aspects but also marketing strategies, financial management, partnerships, and product added value.

Furthermore, low levels of entrepreneurial literacy and managerial skills hinder livestock farmers from developing their businesses toward greater competitiveness (Rahmawati et al., 2024). Most farmers lack the understanding of how to analyze business opportunities, develop business plans, or manage business risks. As a result, livestock and fisheries businesses at the village level are often subsistence-based, unable to generate significant economic returns, and struggling to develop into independent commercial enterprises.

In this context, community service activities focused on mentoring the development of goat and fish farming business models become relevant. Mentoring is carried out through a participatory approach, including training, consultation, and the application of the Business Model Canvas (BMC) as a business analysis tool. The BMC approach was chosen because it has proven effective in helping small and medium enterprises (SMEs) comprehensively understand their business structure and identify areas for improvement (Shenta, 2023; Yulia et al., 2020). Through this method, it is hoped that farmers in Kepuk Village will be able to formulate more efficient, sustainable, and market-oriented business models.

The integration of goat farming and freshwater fisheries also offers significant development potential as a mixed farming system. This model has been proven to increase resource efficiency and reduce production waste by utilizing byproducts across sectors (Van Huong et al., 2018). For example, goat manure can be used as organic fertilizer or plankton feed for fish ponds, while fish pond water can be used to fertilize green pastures for livestock. This synergistic approach not only increases productivity and cost efficiency but also strengthens the economic resilience of farming households.

However, implementing this integrated business system requires increased community knowledge and skills, particularly in business management and marketing. Limited access to information and technology is one factor contributing to the stagnation of smallholder livestock businesses in rural areas (Nababan & Regina, 2021). Therefore, this community service activity is designed not only as a means of knowledge transfer but also as a platform for community empowerment through collaboration between universities, village governments, and livestock farming groups. Furthermore, this business model development mentoring program is also expected to contribute to achieving the Sustainable Development Goals (SDGs), specifically goals 1 (no poverty), 2 (no hunger), and 8 (decent work and economic growth). By strengthening community capacity in managing local resource-based businesses, it is hoped that this will lead to increased welfare, reduced poverty levels, and the creation of village economic independence.

Beyond the economic aspects, this business model development activity also considers social and environmental dimensions. Strengthening livestock group institutions is a primary focus, as business sustainability depends heavily on member collaboration and sound organizational governance. The application of circular economy principles in livestock and fisheries systems is expected to reduce environmental impacts by increasing resource efficiency and utilizing waste (Velasco-Muñoz et al., 2022).

Through this mentoring activity, the community service team also acts as a facilitator of change, helping communities transform from conventional business models to more planned, measurable, and competitive business systems. This process involves identifying local potential, analyzing the value chain, training in developing business models, and implementing and evaluating results. The participatory approach implemented ensures active community

involvement at every stage of the activity, thereby making the service results directly relevant to their needs ([Bona et al., 2020](#)).

This community service initiative is based on the real needs of rural communities for a business model that not only increases income but also creates added value and expands market access. The challenges of globalization and digitalization of the economy require rural micro-entrepreneurs to be more adaptive to change. Through research-based academic mentoring and social entrepreneurship practices, this program is expected to become a replicable model for other villages with similar potential ([Nordberg et al., 2020](#)).

Thus, the primary objective of this community service activity is to assist goat and fish farming groups in Kepuk Village in designing and implementing sustainable, productive, and locally-based business models. This assistance is expected to improve farmers' managerial skills, strengthen partnership networks, and create an efficient, environmentally friendly integrated business system. Furthermore, this activity aims to enhance the institutional capacity of livestock groups so they can act as independent drivers of the village economy.

## METHODS

This community service activity uses a Participatory Action Research (PAR) approach, which emphasizes active collaboration among the implementation team, partner communities, and local stakeholders at every stage of implementation. The PAR approach was chosen because it emphasizes community participation as the primary subject in the process of problem identification, action planning, implementation, and reflection on results, rather than simply as an object of intervention ([Cornish et al., 2023](#); [Khafsoh & Riani, 2024](#)). Thus, this program not only produces outputs in the form of business model documents but also increases the strategic thinking capacity and economic independence of the livestock farming community in Kepuk Village.

The implementation of activities is carried out through several systematic stages, including: (1) situation analysis and mapping of local potential, (2) designing a BMC-based training and mentoring model, (3) implementing entrepreneurship training and workshops, and (4) participatory evaluation and reflection for program sustainability.

### 1. Situation Analysis and Local Potential Mapping

The initial phase focused on mapping the community's socio-economic conditions and identifying the potential of existing goat and fish farming businesses. Data collection techniques included in-depth interviews, field observations, and focus group discussions (FGDs). This approach aligns with the Participatory Rural Appraisal (PRA) method, which is used to comprehensively understand the local context through direct community involvement ([Gadekar, 2025](#)).

The situational analysis shows that most residents of Kepuk Village operate small-scale goat and fish farms with fluctuating productivity levels. Limited knowledge in business planning, market access, and financial management is a major challenge to business development. Therefore, a systematic mentoring model is needed through the Business Model Canvas (BMC) framework so that entrepreneurs can map out critical elements of their businesses, such as value propositions, key activities, customer segments, and revenue streams ([Shenta, 2023](#)).

### 2. Design of Training and Mentoring Models

The second stage is designing a BMC-based training design tailored to the characteristics of the village community. The activity design refers to the findings of [Pepin et al., \(2024\)](#), which showed that the implementation of BMC is effective in strengthening participants' understanding of sustainable business structures. The mentoring model is designed as a blended, participatory training, namely a combination of material-delivery sessions, group discussions, hands-on practice, and business-model-creation simulations. The training module covers the nine main elements of BMC—customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structure—which are directly applied to the context of goat and fish farming businesses in Kepuk Village.

This design activity also utilized research findings ([Maulana & Puspita, 2023](#)), which adapted the BMC to the context of local livestock partnerships in West Sumatra. A similar approach was used to map the value chain between livestock farmers, feed suppliers, collectors, and end consumers. In this way, the BMC serves not only as a planning tool but also as a medium for socio-economic reflection among local actors.

### 3. Implementation of Entrepreneurship Training and Workshops

Field activities were conducted over three months, beginning with program outreach to the community and village officials. Core activities included BMC-based entrepreneurship training, practical business model development, and direct mentoring for livestock farming groups. The learning method was participatory, actively involving participants in simulations and case studies. Participants were divided into small groups, each focusing on a single business type (goat farming or fish farming). Each group then mapped its business model using a poster-sized canvas, as suggested by [Kline et al., \(2013\)](#) in The Innovation Canvas. Through group discussions and facilitator guidance, participants learned to identify the unique value of local products, marketing strategies, and market development opportunities.

In addition to the main training, intensive mentoring sessions are also held to help participants develop business follow-up plans, including simple financial management and local branding strategies. The mentoring activities are conducted using a learning-by-doing approach, allowing participants to directly implement the training outcomes into their business practices ([Colombelli et al., 2022](#)).

### 4. Participatory Evaluation and Reflection

The evaluation phase measured the effectiveness of the training activities and the extent to which participants' understanding, skills, and attitudes toward managing their businesses changed. The evaluation was conducted through three approaches: (1) pre- and post-tests to measure knowledge gains, (2) observations of entrepreneurial behavior during the training, and (3) reflective interviews with participants and village officials.

This evaluative approach adopted the principles of the reflective learning cycle from the PDCA (Plan-Do-Check-Act) model, commonly used in community service activities ([Wiharjo & Wulandari, 2023](#)). Based on the initial evaluation results, there was a significant increase in participants' understanding of the BMC components, their ability to formulate marketing strategies, and their awareness of the importance of collaboration between local actors in the livestock and fisheries value chain.

The joint reflection among participants, the implementation team, and the village also yielded several strategic recommendations for the program's sustainability, including the formation of a joint business group integrating goat and fish farmers into a single production and marketing network. This model is expected to strengthen the community's bargaining position in the market and expand their access to microfinance institutions.

### 5. Program Sustainability and Model Replication

As a follow-up, the community service team designed a sustainability strategy by establishing a village-level Business Support Group that serves as a collaborative platform for livestock farmers, young entrepreneurs, and the village government. This model is expected to be replicated in other villages with similar economic characteristics. Thus, this activity not only increases individual capacity but also strengthens village economic institutions as a foundation for sustainable development. The integration of a participatory approach and innovative BMC-based business models has proven an effective strategy for maintaining a competitive, inclusive, and sustainable local economy.

Table 1. Urgency of Activities in Achieving Community Service Goals

Activity Stages	Activity Objectives	Urgency of Activities
Local Situation and Potential Mapping	Identifying the community's socio-economic conditions, local resource potential, and key challenges in goat and fish farming.	This activity is crucial to ensure data-driven interventions that meet the community's real needs. Accurate mapping helps determine appropriate and relevant mentoring strategies.
Designing a Training and Mentoring Model	Formulate a training design based on the Business Model Canvas (BMC) that is contextualized to the characteristics of fish farmers and cultivators.	This stage is crucial for tailoring training materials and methods to the participants' capacities. Without an appropriate design, activities will not be effective in building a strategic understanding of business models.
Implementation of Entrepreneurship Training and Workshops	Training participants in developing and implementing business models through hands-on practice, discussions, and simulations.	This is the core of community service activities, as it is at this stage that knowledge transfer and the improvement of community entrepreneurial skills occur. This activity serves as the starting point for behavioral change and increased business capacity.
Participatory Evaluation and Reflection	Measuring the effectiveness of activities, the level of improvement in participant understanding, and identifying lessons learned for improvement.	It is crucial to ensure that activities have a real impact. Participatory evaluation allows the community to reflect on progress and foster ownership of program outcomes.
Program Sustainability	Develop a sustainability strategy through the formation of a joint business group or village Business Support Group.	This stage ensures the long-term sustainability of the program's benefits. The existence of local institutions strengthens the village's economic resilience and ensures the sustainability of mentoring outcomes.

## RESULT

The implementation of community service activities focused on mentoring the development of goat and fish farming business models in Kepuk Village, Bangsri District, Jepara Regency, has yielded significant results in improving managerial capacity, entrepreneurship, and the sustainability of community businesses. The results of this activity are divided into several main aspects according to the implementation stages, namely situation analysis, Business Model Canvas (BMC)-based training, business model implementation, results evaluation, and sustainability strategies.

### 1. Results of Situation Analysis and Local Potential Mapping

Initial field observations and in-depth interviews with livestock farmers revealed that most people in Kepuk Village operate small-scale goat farms and traditional fisheries. Seventy-eight percent of respondents reported not having a written business plan, and 65% admitted they didn't understand the concepts of production costs and net profit.

Furthermore, it was found that the business value chain was not optimally integrated between goat farmers and fish farmers. Livestock waste (such as goat manure) was not utilized as fertilizer or a source of plankton feed for fish ponds, resulting in resource inefficiencies. This condition aligns with findings [Chai et al., \(2021\)](#) that emphasize the importance of integrated farming systems for increasing productivity and reducing waste. These field findings served as the basis for designing a

training model that emphasizes understanding the value chain, resource efficiency, and business innovation through the Business Model Canvas.

## 2. Results of the BMC Training and Workshop Implementation

The training was conducted over three days and involved 25 participants, consisting of goat breeders, fish farmers, and village officials. Through this training, participants were introduced to the nine main elements of the Business Model Canvas (BMC) and practiced them in their respective business groups. Pre- and post-test results showed a significant increase in understanding of business concepts. The average understanding score for participants increased from 46% to 82% after the training. Participants began to identify the unique value propositions of their products, such as the quality of local goat meat, organic catfish, and the potential for liquid fertilizer from animal manure waste.

This participatory-based training approach has proven effective in increasing participant involvement and ownership of learning outcomes, in line with the research by [Mncwango and Adanlawo \(2025\)](#), which found that interactive training methods accelerate the transformation of entrepreneurial behavior in rural communities.

In addition to increasing knowledge, this training also produced four new business model prototypes:

- 1) An organic goat slaughter business model with a focus on marketing to local restaurants and catering establishments.
- 2) A liquid fertilizer business model from livestock waste, a collaboration between goat farmers and fish farmers.
- 3) An organic catfish business model differentiated by using natural feed from livestock by-products.
- 4) An integrated goat-fish farming business model that connects the two sectors in one productive cycle.
- 5) Each of these business models was developed using a large canvas containing nine elements of the Business Model Model (BMC). The community service team acted as facilitators and mentors throughout the model development process.

## 3. Business Implementation and Mentoring

Following the training, two months of field mentoring were conducted. During this phase, participants applied the training findings to real-world business practices. As a result, two business groups successfully launched their business models:

- 1) The "Barokah Farm" group implemented a simple financial recording system and developed a partnership strategy with local collectors.
- 2) The "Arif Farm" group integrated goat waste into liquid fertilizer for fish ponds, reducing feed costs by 18% and increasing fish production by 12% within two months.

These results demonstrate the tangible impact of implementing value co-creation principles in local business models, where synergy between economic actors increases efficiency and product added value, in line with the circular business concept proposed by [Ünal et al., \(2019\)](#). The application of value co-creation principles in circular business models involves close collaboration between various actors—such as customers, suppliers, partners, and public institutions—to co-create value. Empirical studies on circular SMEs show that the broader the scope of co-creation, the higher the performance and output of the business ecosystem, especially in supplier relationships. This collaboration strengthens operational efficiency, accelerates innovation, and expands access to resources and markets.



#### 4. Participatory Evaluation and Reflection

The activity evaluation used a pre-test–post-test design, reflective interviews, and observations of participants' entrepreneurial behavior. Based on the evaluation results, three main achievements were identified:

- 1) Improved managerial skills: Participants began to develop business plans and conduct simple analyses of business costs and revenues.
- 2) Changes in entrepreneurial mindset: Participants experienced increased motivation and self-confidence to develop their businesses independently and collaboratively.
- 3) Strengthened socio-economic networks: Communication and collaboration were established between livestock and fish farming groups, which previously operated independently.

These findings reinforce the argument of [Rahmawati et al., \(2024\)](#) that improving entrepreneurial literacy in rural areas directly contributes to increasing community economic competitiveness. Studies in Indonesia confirm that village entrepreneurial communities provide informal learning spaces that will enhance entrepreneurial literacy and community well-being. Independent entrepreneurial literacy programs have also been shown to improve the competency of bamboo entrepreneurs, although they still require ongoing support from the government and other parties ([Prasandha & Susanti, 2022](#)).

#### 5. Program Sustainability and Model Replication

As a result of this collective reflection, the "Kepuk Goat-Fish Joint Business Group" was formed to serve as a joint management platform, as well as a Village Business Support Group comprising representatives from livestock groups, village officials, and youth organizations. This group is tasked with managing advanced training, seeking marketing partners, and developing derivative products such as liquid organic fertilizer and fermented feed.

This program is expected to serve as a model for replication for other villages with similar economic characteristics in Jepara Regency. Strengthening local economic institutions aligns with the principles of community-based entrepreneurship, namely economic development based on community potential and participation. Thus, this activity not only results in increased individual capacity but also strengthens village social and institutional networks as drivers of a sustainable local economy.

Table 2. Summary of Program Achievements

No	Achievement Aspect	Description
1	Improvement of Entrepreneurial and Managerial Capacity	The training and mentoring activities significantly increased the participants' entrepreneurial literacy and business management skills. The average understanding score improved from 46% (pre-test) to 82% (post-test). Participants learned how to identify market opportunities, plan business strategies, and manage costs effectively.
2	Development of New Local-Based Business Models	Four new business model prototypes were developed using the Business Model Canvas (BMC) approach: (1) organic goat meat business model, (2) organic fish farming model using goat waste as input, (3) liquid fertilizer business from livestock waste, and (4) integrated goat–fish farming model. These models represent practical, sustainable innovations that utilize local resources.
3	Establishment of Collaborative Business Groups	Two new community-based business groups were formed – "Barokah Farm" and "Arif Farm" – focusing on integrated farming and cooperative marketing. These groups have started implementing their business models collaboratively and sharing resources to reduce operational costs.

No	Achievement Aspect	Description
4	Improvement in Business Efficiency and Productivity	The integration of goat waste into fishpond management reduced feed costs by 18% and increased fish production by 12% within two months of implementation. This shows a measurable impact on production efficiency and income growth for participants.
5	Strengthening of Institutional and Networking Capacity	The creation of a “Kepuk Goat–Fish Joint Business Group” and a Village Business Support Group has strengthened local economic institutions. These groups facilitate knowledge sharing, marketing partnerships, and access to microfinance institutions.
6	Enhancement of Sustainable and Circular Economy Practices	The integration of livestock and aquaculture practices promotes resource efficiency and waste reduction. This aligns with circular economy principles, creating both environmental and economic benefits for rural communities.
7	Community Empowerment and Social Impact	Participants showed increased confidence, stronger collaboration, and improved problem-solving capacity. The participatory approach fostered ownership, self-reliance, and motivation to sustain the program beyond the project duration.

## CONCLUSION

Community service activities focused on mentoring the development of goat and fish farming business models in Kepuk Village, Bangsri District, Jepara Regency, have successfully achieved their main objective, namely increasing the entrepreneurial and managerial capacity and economic sustainability of village communities through the application of the Business Model Canvas (BMC) approach. The application of BMC in the context of rural business development has proven effective in helping participants understand business structures, design value strategies, and map resources more systematically. Through training, mentoring, and participatory evaluation, the community not only gained conceptual knowledge but also experienced real changes in entrepreneurial behavior and mindset, leading to more productive and directed business management.

The results of this activity demonstrate that integrating goat and fish farming can create sustainable economic synergy and align with the principles of a circular economy. The use of livestock waste as input in fisheries activities has successfully increased cost efficiency, reduced the use of artificial feed, and simultaneously reduced organic waste that pollutes the environment. Furthermore, the formation of joint business groups such as Barokah Farm and Arif Farm demonstrates the improvement of local economic institutions, thereby strengthening the community's bargaining position in the market and expanding business networks. Thus, this community service activity not only provides a direct financial impact but also strengthens the social and collaborative capacity of village communities.

The results of this activity provide important contributions in three areas. First, in practical terms, BMC has proven adaptable in rural contexts as a simple yet effective participatory learning tool for developing innovative small-scale community businesses. Second, in policy terms, this community service model can serve as a reference for local governments and village economic empowerment institutions in designing programs oriented towards local economic independence and integrated resource utilization. Third, academically, this activity strengthens empirical evidence that the Participatory Action Research (PAR) approach can accelerate socio-economic transformation at the community level.

However, this activity has several limitations. The relatively short duration of the mentoring program, approximately three months, meant that the internalization of entrepreneurial values could not be measured in depth. Furthermore, the number of participants directly involved was limited to a small group, so generalizing the results to the entire village community requires caution. External factors such as fluctuations in feed prices and weather conditions also influence the



economic outcomes of livestock and fisheries businesses. Therefore, follow-up activities with a longer mentoring period and a broader participant base are highly recommended to strengthen the program's impact and sustainability.

Based on the results and reflections on the activities, several recommendations can be put forward. First, a sustainable mentoring system involving universities, village governments, and microfinance institutions is needed to strengthen financial management and marketing aspects. Second, future training activities should include diversification of derivative products, such as goat milk processing, liquid fertilizer, or fermented feed, to increase economic added value. Third, strengthening networks and partnerships between village business groups, cooperatives, village-owned enterprises, and the private sector is crucial to expand market access and capital. Finally, further research is needed to assess the long-term impact of implementing an integrated goat-fish business model from an economic, social, and environmental perspective.

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