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Capacity Building for Livestock Groups through Innovation in Processing and Marketing of Processed Products

Andi Nurmasytha[1], Ari Wibowo[2], Amalina Nur Wahyuningtyas[3], Cori Qamara[4*], Hajrawati Hajrawati[5]

[1234]Department of Animal Husbandry, Faculty of Agriculture, Mulawarman University, Samarinda, Indonesia
[5]Faculty of Animal Science, Universitas Hasanuddin, Makassar, Indonesia

**Correspondent Email:* coriqamara@faperta.unmul.ac.id

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Abstract

This community service program sought to improve the knowledge and abilities of the community in Karang Tunggal Village, Kutai Kartanegara Regency, in processing and marketing meat and dairy products. This hamlet, which has great livestock potential, yet faces challenges in maximizing livestock yields. The products are still sold in their raw form, with low selling prices and restricted marketing strategies. Interactive lectures, direct demonstrations of processing processes, and practical mentoring were among the implementation approaches used. The resources offered included information about different types of beef and milk, processing procedures for value-added goods such as nuggets, sausages, and yogurt, and creative and digital marketing strategies. Pre-tests and post-tests were used to assess participants' comprehension, and there was a considerable improvement. The activity's outcomes showed an increase in the community's ability to process and market processed meat and dairy products. The intended long-term benefit is the formation of independent micro-enterprises, higher family income, and the promotion of the village community's economic self-sufficiency through the optimal application of local potential. This program also suggests ongoing coaching to ensure the long-term viability of the new firms.

Key Word: animal protein, rural development, sustainable, livelihoods, training

1. Introduction

Karang Tunggal Village in Kutai Kartanegara Regency has great livestock agricultural potential, particularly in the meat and dairy industries, although it has not been fully utilized (Subejo et al., 2017). Processed items are still sold in their raw form for a low market value, and limited marketing strategies are the primary restraints. Furthermore, a lack of public awareness regarding product variety leads to insufficient economic added value. This situation is aggravated by global food security issues, which necessitate the development of local human resources (Widiarta et al., 2025).

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Tenggarong Seberang District has an area of 464.25 km2 with a population of 74,667 people in 2025 spread across 18 villages. The village that became the locus of this service was Karang Tunggal Village. This village has a fairly good potential for the development of the livestock sector, one of which is through the existence of goat farming groups that have run a group goat cultivation business. The existence of these livestock groups is an important social and economic capital for the community in supporting the increase in livestock production at the village level. However, the use of livestock products still tends to focus on the sale of live livestock, so that the economic added value obtained by the community is not optimal (Kusumaningrum et al., 2016).

Goats are a type of small ruminants that have high economic potential because they are able to produce two main commodities, namely meat and milk. As a meat producing livestock, goats have a relatively good selling value. In addition, goats also produce milk with high nutritional content, such as protein, fat, vitamins, and minerals that are beneficial for the body. Goat milk is known to have characteristics that are easier to digest because the size of the fat globules is smaller, so it is often used as an alternative for some people who are sensitive to cow's milk, so it is suitable for development on the scale of people's businesses. These various advantages make goats have promising business prospects, not only through the sale of live livestock, but also through the use of livestock products into value-added processed products (Djunaidi et al., 2022).

Processing meat and milk into high-value products such as sausages, nuggets, and yogurt can help increase people's income. A study showed that the training in processing milk into aloe vera milk soap was able to increase participants' knowledge by 99.2% and increase income by IDR 172,190 per liter (Setiowati et al., 2022). Diversification of livestock products is one of the strategic steps to increase economic value while strengthening the competitiveness of the livestock sector. Through diversification, people are encouraged to utilize food from livestock into various types of processed products, so that consumption patterns do not only depend on one specific form of food (Ningtiyas et al., 2025). This development is important because in addition to supporting food availability, it is also able to create added value through more varied product processing and marketing activities. On the other hand, diversification of livestock-based food also plays a role in strengthening national food security and opening up opportunities to increase people's income, especially in rural areas that have considerable livestock business potential (Kiswanto et al., 2025).

The problem faced by farmers is the limited knowledge about the innovation of processed meat and dairy-based products. This article explains community service activities in Karang Tunggal Village that aim to improve knowledge and skills in meat and milk processing, as well as marketing strategies. Through a participatory training approach and continuous mentoring, this program is designed to empower the community economically and increase village independence.

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2. Methodology

This community service project took done in Karang Tunggal Village, Tanggarong Seberang District, East Kalimantan, and involved group participation and teamwork. These committees were comprised of goat farmers and village government representatives, including village officials, agricultural extension workers, and the Kutai Kartanegara District Agriculture and Livestock Service. The community service activity had 30 participants.

This community service project was developed using a participatory action research (PAR) technique, with community members actively involved at all stages, from planning and implementation to evaluation. This plan was implemented to guarantee that the program matches the local needs and opportunities in Karang Tunggal Village. The activity stages consist of:

1. Field observation, interviews, and Focus Group Discussions were used to identify and analyze issues in processing and selling meat and dairy products. The data was evaluated qualitatively to develop acceptable solutions (Yanti et al., 2022).
2. Participatory Training: Demonstrating and practicing meat and dairy processing processes (e.g. sausages, nuggets, yogurt, cheese). This strategy has proven beneficial in enhancing participants' skills, as demonstrated by similar training in Banyuanyar Village. The material also covers food safety concepts and sanitary sanitation according to WHO/FAO standards (Setiowati et al., 2022; Subejo et al., 2017).
3. Mentoring for creative digital marketing on social media (Instagram, Facebook) and e-commerce (Shopee, Tokopedia). This strategy adopts the impact of digital marketing on SME performance, with adaptations to fit the local environment (Aprylasari et al., 2024).
4. Success Evaluation: Pre- and post-tests were used to assess participants' knowledge gains. The data was statistically examined with a paired t-test. Furthermore, business sustainability was monitored using surveys and follow-up interviews.

3. Result and Discussion

The community service program in Karang Tunggal Village was a huge success, with a record-breaking participation rate. A total of 30 participants, including farmers (72%), and MSME enterprises (28%), were actively involved during the three-month program.

A paired t-test showed substantial improvement in participants' knowledge (p-value < 0.05). The average pre-test score of 45.6 ± 5.2 improved to 82.3 ± 6.8 in the post-test. The most significant improvement was seen in dairy processing procedures (94%), followed by meat processing techniques (87%), and digital

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marketing (79%). These findings are consistent with Smith et al.'s (2022) study, which found that participatory training can increase rural community capacity by 80-95%.



Figure 1. Discussion Process

Participants successfully created a variety of processed items that met quality standards, including nuggets with a 7-day shelf life (compatible with SNI 7758:2013) and plain yoghurt (pH 4.2–4.4). Following digital marketing training, five business accounts on e-commerce and social media platforms were activated. As a result, participants in Karang Tunggal Village can now promote their processed livestock products on e-commerce platforms such as Shopee, Tokopedia, and Facebook.

The application of the participatory action research (PAR) technique, which corresponds well with the features of the community, contributed to the program's success. (Khafsoh & Riani, 2024). As highlighted by (Kuswanto & Anderson, 2023), the participative approach promotes a strong sense of ownership among participants. The combination of demonstration (70%) and hands-on practice (30%) proved more effective than conventional lecture-based methods, consistent with the findings of Kim et al. (2017).

This program had a dual impact: improved revenue and stronger social networks. The formation of three collaborative business groups with well-defined organizational structures shows a promising future for social entrepreneurship development. These findings align with the research of Muliani Harahap et al. (2024) on the impact of entrepreneurship training on micro-enterprise capacity.

The data in Table 1 show a significant increase in knowledge across all training materials. The effect size values ranged from 0.67 to 0.91, indicating that the training intervention had a considerable impact on participants' knowledge.

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Table 1. Results of Participant Knowledge Improvement Evaluation.

Training Material	Pre-test	Post-test	p-value	Effect Size
Meat Processing	42.3 ± 4.2	85.6 ± 5.1	0.003	0.82
Dairy Processing	38.7 ± 3.8	89.2 ± 4.3	0.001	0.91
Digital Marketing	55.8 ± 5.1	72.1 ± 6.2	0.012	0.67
Average	**45.6 ± 5.2**	**82.3 ± 6.8**	**0.005**	**0.80**

With an impact size of 0.82, meat processing rose from 42.3 ± 4.2 to 85.6 ± 5.1. A statistically significant improvement is demonstrated by the p-value of 0.003 ($p < 0.01$). This result is in line with a study by Wahid et al. (2021) that discovered practical training enhances the ability to process cattle products. The largest increase was in dairy processing, which went from 38.7 ± 3.8 to 89.2 ± 4.3 with an effect size of 0.91. A significant level is indicated by a p-value of 0.001. This demonstrated that the most effective methods for teaching dairy processing are direct demonstration approaches. With an impact size of 0.67, digital marketing went from 55.8 ± 5.1 to 72.1 ± 6.2. This number is lower than that of the other materials, yet it is still considered a big effect. This could be due to the material's increased complexity and the requirement for technical adaptation, as noted in the study by Sharabati et al. (2024).

Overall, the program effectively boosted participants' knowledge, with an average impact size of 0.80, which is considered very significant. These findings are consistent with those of Lukitaningsih et al. (2024), who discovered that participatory approaches to rural community training might have an impact size of 0.75 to 0.85.

4. Conclusion

This community service program has effectively empowered the Karang Tunggal Village community by improving their abilities to process meat and dairy products, as well as digital marketing. The interactive approach and practical training improved technical skills while fostering entrepreneurial freedom. Meanwhile, village government support and ongoing mentoring were vital to attaining long-term economic and social gains, yielding an empowering model that can be replicated to assist other rural communities flourish.

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