




Innovation in Freshwater Fish Processing for Value Addition to Enhance Income and Food Security in Lamongan

Siti Musarofah^{*}, Tri Winarsih², Ma'rufatur Rodiyah³, Panji Winoto⁴, Anggraeni Sovi Maria Septiana⁵

^{1,2,3,4,5} Institut Teknologi dan Bisnis Ahmad Dahlan, No. 41, Lamongan

 sitimusarofah254@gmail.com (Corresponding author's email)

ARTICLE INFO

Article history

Received : 8-9-2025

Revised : 3-1-2026

Accepted : 22-1-2026

Keywords

community service,
product innovation,
freshwater fish, added
value

ABSTRACT

This community service program was carried out in Banjarejo Village, Kedungpring Subdistrict, Lamongan Regency, with the aim of increasing the added value of freshwater fish through product innovation. The village's fishery potential, which has so far only been marketed in the form of fresh fish, has resulted in low selling prices and limited community income. To address this problem, the service team applied the Participatory Action Research (PAR) method by involving 20 village youths. The activities included socialization, training in the production of processed fish products (smoked fish, nuggets, and presto fish), training in packaging design, digital marketing, and business mentoring. The results of the program showed that participants were able to produce and package processed fish products properly. The evaluation indicated that 85% of participants could independently repeat the processing techniques. The tangible impact of this activity was an increase in the selling price of fish from IDR 15,000–18,000/kg to IDR 40,000–60,000/kg. In addition to providing economic benefits, this program also supports local food security by providing nutritious products based on freshwater fish.

This is an open access article under the [CC-BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.



A. INTRODUCTION

Banjarejo Village in Kedungpring District, Lamongan Regency, is an area with considerable freshwater fisheries potential. However, to date, fish harvested from the village reservoir are still sold exclusively as fresh fish. This condition results in relatively low fish prices, ranging from IDR 15,000 to IDR 18,000 per kilogram. Consequently, community income remains suboptimal, and the competitiveness of village fishery products is still relatively weak (Ardiansyah & Yuliana, 2020).

Despite these challenges, there is substantial potential for fisheries product diversification through innovations in processed fish products that can increase added value and expand market reach. Previous studies have demonstrated that training in fish processing and fisheries product diversification can enhance community skills and encourage the development of sustainable local enterprises (Hapsawati et al., 2022). Products such as smoked fish, fish nuggets, and pressure-cooked fish have been proven to significantly increase



product value and expand market share. Moreover, with the application of simple processing technology and creative packaging, processed fish products are able to penetrate both local and regional markets more effectively (Lestari & Handayani, 2022; Khasanah & Fauzan, 2023).

Nevertheless, there is a significant service gap between the fisheries potential possessed by the Banjarejo Village community and the supporting services currently available. The community has not yet received adequate services in the form of fish processing technology training, product standardization assistance, branding and marketing strategies, or access to modern processing equipment that aligns with local needs. In fact, previous studies indicate that structured post-harvest training and continuous mentoring can directly improve product quality and economic value while simultaneously fostering entrepreneurial spirit within the community (Usdyana Attahmid et al., 2021). The absence of these services has limited the community's ability to transform raw fish resources into competitive value-added products.

Beyond economic benefits, freshwater fish processing also plays a strategic role in strengthening local food security. Processed fish-based products provide a highly nutritious and affordable source of protein that is more accessible to the wider community. This contribution is closely aligned with the Sustainable Development Goals (SDGs), particularly SDG 1 (No Poverty) through income generation and SDG 2 (Zero Hunger) through improved food availability and nutrition (UNDP, 2020; FAO, 2021).

Against this backdrop, a community service team from the Ahmad Dahlan Institute of Technology and Business (ITB Ahmad Dahlan) Lamongan implemented a freshwater fish processing training program targeting youth in Banjarejo Village. The program aimed to develop entrepreneurial skills, produce value-added fishery products, and open up opportunities for digital-based marketing (Suherman et al., 2024). Through this intervention, the program is expected to increase community income, strengthen youth participation in local economic activities, and enhance the overall competitiveness of the village economy (Mu'ah et al., 2024).

B. METHODS

The method used in this community service activity was Participatory Action Research (PAR). PAR is a research approach that emphasizes active community involvement at every stage of the activity, from problem identification to outcome evaluation (Kemmis et al., 2014). By directly involving village youth, this activity provided not only theoretical knowledge but also practical experience that could be immediately applied (MacDonald, 2012).

The PAR approach combines elements of research, action, and reflection, resulting in a transformative process. The knowledge generated is not only academic but also relevant to the practical needs of the community (Reason & Bradbury, 2008). In the context of community service, PAR has proven effective in encouraging active participation and empowering communities to achieve sustainable social change (Baum et al., 2006).

The program began with a socialization session held at the village hall, which was attended by 20 youth from Banjarejo Village and a village official representing the local government. At this stage, the community service team explained the program objectives, the benefits of fish processing innovation, and an overview of the training plan. This socialization was essential to ensure that participants understood the urgency of the program and were motivated to actively engage in the activities.

The fish processing training was conducted on Saturday, August 16, 2025. During this stage, participants were trained in the production of various processed fish products, such as smoked fish, fish nuggets, and soft-bone pressure-cooked fish. In addition, participants received training in packaging design, product labeling, and digital marketing strategies

using social media (Suherman et al., 2024). Throughout the training, participants had the opportunity to directly practice production and packaging techniques under the guidance of the community service team.

The activity concluded with a mentoring and evaluation session. The mentoring aimed to assist participants in mastering the use of production equipment, understanding basic business management, and actively marketing their products through digital platforms (Sri Yaumi et al., 2023). The evaluation was conducted through observation, interviews, and participant satisfaction questionnaires to assess the achievement of the community service objectives.



Figur 1. Member Pelatihan



Figur 2. uji coba alat vakum



C.RESULTS AND DISCUSSION

This community service program resulted in a measurable improvement in the capacity of Banjarejo Village youth to process freshwater fish products. Participants were not only able to produce three types of processed fish products smoked fish, fish nuggets, and soft-spine pressure cooked fish but also demonstrated a comprehensive understanding of post-harvest processes, including raw material selection, hygienic processing practices, production techniques, and product packaging and labeling. Evaluation results indicated that approximately 85% of participants achieved production independence, as evidenced by their ability to replicate the processing techniques independently without direct supervision. This finding confirms the effective transfer of knowledge and skills through the program.

From an economic perspective, the program successfully generated a significant increase in product value added. Processing fresh fish into ready-to-eat products increased the selling price from IDR 15,000–18,000 per kilogram to IDR 40,000–60,000 per kilogram. This price increase reflects a shift from raw material-based sales to value-added product commercialization, which is a key indicator of successful local economic empowerment. These results are consistent with previous studies highlighting the role of fisheries product diversification in increasing rural community income (Maulana & Prasetyo, 2021).

In the medium term, this program contributes to the strengthening of entrepreneurial capacity among village youth and the creation of new group-based business opportunities. Participants began to move beyond production roles and developed a basic understanding of small-scale business management, including pricing strategies, attractive packaging, and digital marketing through social media platforms. This foundation increases the likelihood of business sustainability beyond the program's implementation period.

Beyond economic impacts, the program also generated social and food security benefits. The availability of nutritious and accessible freshwater fish-based processed products contributes to improved local food security, particularly in increasing access to high-quality protein sources. Accordingly, this program supports the achievement of the Sustainable Development Goals (SDGs), especially SDG 8 (Decent Work and Economic Growth) through the creation of productive employment opportunities and SDG 12 (Responsible Consumption and Production) through the efficient and sustainable utilization of local resources (ILO, 2020; UNEP, 2022).

Overall, this community service activity not only produced tangible outputs in the form of training and products, but also facilitated behavioral change, capacity building, and the development of sustainable economic opportunities for the Banjarejo Village community.

D.CONCLUSION

Community service activities in Banjarejo Village have successfully improved the skills of young people in processing freshwater fish into value-added products. Through systematic training, participants are able to produce attractively packaged fish floss, nuggets, and pressure-cooked fish and are beginning to utilize digital marketing.

The main impact of this activity is increased fish prices and growing public awareness of the importance of fishery product innovation. With the skills they have acquired, village youth have greater opportunities to develop fishery-based businesses, both independently and in groups.

In addition to providing economic benefits, this program also contributes to improving local food security by providing nutritious and accessible products to the community. This



activity demonstrates that simple innovations at the village level can bring about real change in improving community well-being.

Therefore, program sustainability is essential. Continued mentoring and support from village governments and relevant institutions will be key to maintaining success and expanding the program's impact to the wider community.

C. ACKNOWLEDGEMENTS

The author would like to thank the Ahmad Dahlan Institute of Technology and Business in Lamongan for supporting this activity. He also thanks the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek), through its Science and Technology funding, for funding this community service activity, ensuring its successful implementation.

Appreciation was also given to the Banjarejo Village apparatus who played an active role in facilitating activities as well as the Banjarejo Village youth group who had shown high enthusiasm in participating in the training.

D. AUTHOR CONTRIBUTIONS

1. Siti Musarofah: Concept development, coordination and training in fish processing.
2. Tri Winarsih: Simple business management and bookkeeping training.
3. Ma'rufatur Rodhiyah: Technical assistance and activity evaluation.
4. Panji Winoto & Anggraeni Sovi Maria Septiana: Documentation, field assistance, and participant mentoring.

E. REFERENCES

- Mu'ah, Musarofah, S., Rita Nataliawati, & Mesra Surya Arifien. (2024). Entrepreneurship and Accounting Training for Traders in District I, Ho Chi Minh City, Vietnam. *Journal of Community Service Management*, 5(2), 37-46. <https://doi.org/10.32528/manage.v5i2.1862>
- Sri Yaumi, Tri Winarsih, Ananda Yuniar, Yuliana Dewi Safitri, Suhari, Lusi Nur Widyawati, Hermanto Hadi, & Abdul Majid. (2023). DIGITALIZATION OF MSMES: UTILIZATION OF SOCIAL MEDIA AS A MEANS OF MARKETING BABY FISH CHIPS IN GEDONG BOYOUNTUNG VILLAGE, LAMONGAN. *Journal of Academic Community Service*, 1(4), 8-12. <https://doi.org/10.59024/jpma.v1i4.314>
- Suherman, S., Musarofah, S., & Fauzi, MN (2024). Product Packaging Design Training to Increase Sales at MSMEs in Gondang Lor Village, Sugio, Lomongan. *Society: Journal of Community Service*, 3(5), 323-327. <https://doi.org/10.55824/jpm.v3i5.444>
- Ardiansyah, R., & Yuliana, M. (2020). Strategy for increasing market access for fishery products. *Journal of Economics and Development*, 18(3), 99-106.
- Baum, F., MacDougall, C., & Smith, D. (2006). Participatory action research. *Journal of Epidemiology & Community Health*, 60(10), 854-857. <https://doi.org/10.1136/jech.2004.028662>
- F.A.O. (2021). The state of food security and nutrition in the world. Rome: FAO.
- Hidayat, T., & Dewi, S. (2021). Freshwater fisheries potential in rural areas. *Indonesian Fisheries Journal*, 13(2), 45-52.
- ILO. (2020). Decent work and the 2030 agenda for sustainable development. Geneva: ILO.
- Kemmis, S., McTaggart, R., & Nixon, R. (2014). The action research planner: Doing critical participatory action research. Springer.



- Khasanah, U., & Fauzan, A. (2023). Processing fish into products with economic value. *Journal of Community Service*, 5(1), 12-18.
- Lestari, W., & Handayani, S. (2022). Innovation in fish processing to increase product added value. *Journal of Food Technology*, 14(1), 65-71.
- MacDonald, C. (2012). Understanding participatory action research: A qualitative research methodology option. *Canadian Journal of Action Research*, 13(2), 34-50. <https://doi.org/10.33524/cjar.v13i2.37>
- Maulana, A., & Prasetyo, E. (2021). Diversification of fishery products: Opportunities and challenges. *Journal of Village Development*, 10(2), 88-94.
- Putri, RR, & Kurniawan, B. (2021). Analysis of freshwater fish value chains in underdeveloped areas. *Journal of Fisheries Agribusiness*, 9(1), 31-38.
- Reason, P., & Bradbury, H. (Eds.). (2008). *The SAGE handbook of action research: Participative inquiry and practice* (2nd ed.). Sage Publications.
- UNDP. (2020). Sustainable development goals (SDG) 1: No poverty. New York: UNDP.
- UNEP. (2022). Responsible consumption and production: SDG 12 progress report. Nairobi: UNEP.