



Increasing The Added Value Of Marine Products: Fish Processing Diversification Training For Fishermen Groups In Tanjung Riau Fishing Village

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Abstract

This community service activity aims to increase the added value of marine products through training on processed fish diversification for fishermen groups in Tanjung Riau Fishing Village. This program is a collaboration between the Culinary Management Study Program of the Batam Tourism Polytechnic and the local community, with the main target of small-scale capture fishermen, fishermen's families, young fishermen, and micro-business groups based on marine products. The main problems faced by coastal communities, namely the low selling value of fresh fish and marine product waste that has not been optimally utilized, are overcome through educational and applicative approaches. The activity methods include field identification, initial socialization, practical training, utilization of marine product waste, and post-training evaluation. The training is carried out directly with a *learning by doing approach*, covering processing techniques for products with economic value such as *Prawn Bisque* and *Dry Prawn Powder*. The training material also emphasized the importance of hygiene standards, food safety, and the use of shrimp shell waste as part of the circular economy principles. The results of the activity showed an increase in the knowledge and skills of participants in processing seafood into processed products with high selling value and awareness of environmentally friendly waste management. This activity also contributes to opening new business opportunities and strengthening the entrepreneurial spirit of coastal communities. With an integrated approach between education, technical training, and empowerment, this activity is expected to have a sustainable impact on economic, social, and environmental aspects in coastal areas.

Keywords: *Diversification; Shell waste; Marine Products; Shrimp; Fisherman*

INTRODUCTION

The desire of the public to get an interesting experience from this industry is growing, and one of the industries that benefits from this trend is the food industry where the culinary industry that is included in the tourism industry is growing very rapidly Indonesia, with its large population, significant destinations and food needs, faces challenges in ensuring the availability of adequate protein sources to meet the needs of tourists. Riau Islands Province is one of the islands based provinces in Indonesia with the characteristics of a region dominated by the ocean with a regional composition of 4% land and 96% ocean. Tanjung Riau is the name of a village located in Sekupang sub-district, Batam City, Riau Islands, Indonesia. The area of this village is 23.90 km², with a population of 23,987 people in 2020, and a density of 1,004 people/km². At first, Tanjung Riau Old Village was not called Old Village, but Tanjung Riau. In Malay, the coastal area that overhangs is called Tanjung, then because it is in the Riau Province area (before



finally blooming into the Riau Islands Province in 2002). The old village of Tanjung Riau, namely RW 001 and RW 002, has existed since several hundred years ago with the name Tanjung Riau which has a majority of Malays from Tanjung Pelanduk (now the Tanjung Uncang Industrial Estate) and Tanjung Batu (now the Marina City) who fled to Tanjung Riau (Kampung Tua) after being evicted because the two areas will be used as industrial areas. In addition to these two areas, the residents of Kampung Tua Tanjung Riau also come from Kaka Island, Lengkang Island, and Sarang Island. At that time, Batam City only had 3 sub-districts, namely Sekupang District, Balik Padang District and Lubuk Baja/Nagoya and Tanjung Riau Districts, including the Rear Padang District area. Other areas around Kampung Tua Tanjung Riau such as Kampung Ponjen, Kampung Baru, Kampung Bukit and so on are areas that have only emerged about 30 years ago. At the time, Nyat Kadir served as the mayor of Batam for the period 2001-2005, there was a mention of Old Villages for the natives living in Batam City and until now, there are 32 Old Villages in Batam City including the Old Village of Tanjung Riau with Sekupang District. The work of the residents is dominated by traders and fishermen. (Juliani & Rini, 2023). (Astiana) Et Al. , 2025) (Rini, 2021)

Indonesia, with its large population and significant food needs, faces challenges in ensuring the availability of adequate protein sources to meet a balanced diet (Rini & Luthfiah, 2024) . Indonesia as an archipelagic country has a huge potential for marine resources, including abundant fish catches. One of the areas that has a wealth of marine products is the Tanjung Riau Fishing Village, most of whose residents make a living as traditional fishermen. However, the use of marine products in this region still tends to be limited to the sale of fish in fresh form, without going through advanced processing processes that can increase added value economically. Food that is categorized as traditional food is food that has food criteria that have been commonly consumed for generations, have a taste that matches people's tastes, do not contradict the religion, beliefs, and beliefs of the local community, and are made from food ingredients and spices available around the local (Afriani Et Al. , 2022) environment. However, the lack of knowledge and skills in processing seafood into various processed products with high selling value is one of the main obstacles faced by fishermen groups in Tanjung Riau. This causes their income to be highly dependent on fluctuations in the price of fresh fish in the market, as well as vulnerable to losses when the catch is abundant but not absorbed by the market. A simple effort to implement innovation is diversification by changing the use of the main ingredients used to make other types of products, the right



product diversification can improve product quality and maximize the revenue generated (Rini Et al., 2024)

Diversification of seafood is one of the strategic solutions to overcome these problems. Through proper training, fishermen groups can be empowered to utilize the catch not only as a raw commodity, but also as raw materials for processed products such as main foods, soups, snacks. This diversification not only extends the shelf life of the product, but also opens up new business opportunities and increases the competitiveness of local products in a wider market. (Gunawan Et Al. , 2023) In addition to the cheap basic ingredients, many benefits and nutrients are contained in shrimp skin and can create it into a tasteful and profitable product. Waste from seafood traders or the culinary industry that can be used as a basic commodity for foodstuffs as an alternative substitute (Riyanti & Rini, 2022) (Astiana) Et al., 2023). Therefore, this community service activity is carried out with the aim of increasing the capacity and skills of fishermen groups in Tanjung Riau Fishing Village in terms of processing and diversifying marine products. Through applicable and local potential-based training, it is hoped that fishermen will be able to create processed products with economic value, as well as strengthen the economic resilience of fisher families in a sustainable manner. (Rini Et Al. , 2023)

COMMUNITY OVERVIEW

The community service activity entitled *"Increasing the Added Value of Marine Products: Processed Fish Diversification Training for Fishermen Groups in Tanjung Riau Fishing Village"* has the main goal of increasing the economic value of marine products through education and training to fishermen groups. The specific objectives of this activity include increasing fishermen's awareness of the economic potential of seafood shell waste that has not been optimally utilized, providing education on the techniques of sorting and processing the waste into value-added products such as organic fertilizers, animal feed, handicrafts, or natural calcium raw materials, as well as reducing environmental pollution due to the accumulation of shell waste in coastal areas. In addition, this activity also aims to encourage innovation and diversification of marine product derivatives, not only from fish meat but also from waste parts such as shells, as well as developing a circular economy-based empowerment model that supports *the principle of zero waste*. It is hoped that these goals can have an overall positive impact on the fishing community, both from economic, social, and cultural aspects.



The implementation of this activity provides various significant benefits, not only for individual fishermen but also for the community, environment, academics, and local governments. For fisher groups, this activity can improve skills and knowledge in processing catches into high-value products, adding alternative sources of income, and reducing dependence on fluctuations in fish market prices. From an environmental perspective, this activity encourages the use of marine product waste such as bones and shells for environmentally friendly additional products and increases awareness of the importance of sustainable processing. Other benefits are felt by the surrounding community through the opening of new business opportunities and the growth of entrepreneurial spirit in coastal areas. For the academic world, this activity is a form of real contribution of universities in solving societal problems through scientific and applicative approaches, as well as a means of applying appropriate technology. Meanwhile, for local governments, this activity supports fishermen empowerment programs and local economic development based on marine potential, as well as strengthening the growth of the creative economy sector based on local natural resources. Overall, this activity has a positive long-term impact on building the independence and welfare of coastal communities.

METHODOLOGY

Activities to Increase the Added Value of Marine Products: Processed Fish Diversification Training for Fishermen Groups in Tanjung Riau Fishing Village is a form of collaboration between the Culinary Management Study Program of the Batam Tourism Polytechnic and the local community. This activity was designed by lecturers as a form of community service with the main target of groups that are directly involved in fisheries activities and have the potential to be empowered through marine product processing training. The main targets include small-scale capture fishers who have limited market and technology access, fisher families, especially housewives who have the potential to run a home business, and young fishermen who are interested in developing innovative businesses. In addition, this activity also targets micro and small business groups based on marine products, community leaders and fishermen's group administrators who are expected to be agents of change, as well as local stakeholders such as RT/RW, village officials, and fishermen's cooperatives that support local economic empowerment.

The method of implementing activities is carried out gradually and systematically to answer the problem of low added value of marine products and limited marine product processing skills in fishermen. The first stage is field identification and observation,





where the implementation team conducts an initial survey to understand socio-economic conditions, dominant types of marine products, waste potential, and community readiness. The next stage is socialization and initial counseling to community leaders and fishermen to explain the program's objectives and build participatory commitments. Furthermore, the training is carried out through *a learning by doing approach* in the form of practical workshops, one of which is a demonstration of making processed products such as *Prawn Bisque*, which is also equipped with education on hygiene and food safety standards. The training material also includes the use of marine product waste, for example shrimp shells that can be processed into *dry prawn powder*, organic fertilizers, or handicraft materials, in line with circular economy principles. The activity was closed with a thorough evaluation of the training results, the challenges faced by the participants, and the potential for sustainable business development.



Figure 1. Training Activities in Tanjung Riau

The training activity material includes three main parts. First, counseling on the potential and problems of marine products delivered by Team 1, which explained the challenges in selling fresh fish and the importance of product diversification. Second, Team 2 delivered material on the diversification of processed fish products, explaining the advantages in terms of economic value, shelf life, and market potential. Third, practical training is guided by Team 3, where participants are invited to be directly involved in the process of selecting ingredients, cooking techniques, and product presentation. Examples of recipes taught are *Prawn Bisque* and *Dry Prawn Powder*, which are not only nutritious and have a high selling value, but also demonstrate the use of waste into innovative products. With an applicable and community-based approach, this activity is expected to be able to strengthen the economic capacity of coastal communities in a sustainable manner.



SUSTAINABLE RESULT AND POTENSIAL

The community service activity entitled "Increasing the Added Value of Marine Products: Fish Processing Diversification Training for Fishermen Groups in Tanjung Riau Fishing Village through the Shell Waste Treatment Approach" has had a real and measurable positive impact on increasing the capacity of local fishermen groups. One of the main results achieved is the increase in the knowledge and skills of participants in processing seafood into value-added products of *Prawn Bisque*. These products have never been developed by the community before, which has only sold fresh catches. Through hands-on practice-based training, fishermen and housewives who are members of the target group are able to practice the production process themselves using simple household appliances. This success shows that simple processing technologies can be accepted and applied well if they are delivered contextually and according to local needs.

In addition to the processing of marine products, another important result is the success of participants in utilizing the waste of seafood shells, such as shellfish, shrimp, and crabs, which were previously discarded and became a source of pollution in the coastal environment. This shell waste has been successfully processed into several derivative products, including *Dry Prawn Powder* to add flavor. The processing process is carried out in stages, starting from separation, crushing, to mixing materials to become powders. The trainees also showed a high interest in making food products with a long shelf life typical of the coast, which has market potential for both locals and tourists. This success proves that waste that was previously considered useless can now be an alternative source of income and create a circular economy at the level of fishing households.

In terms of the environment, this training also makes a significant contribution in fostering collective awareness about the importance of maintaining the cleanliness and sustainability of coastal areas. The participants began to demonstrate initiatives to collect shell waste from daily catches and store it for production purposes. This is a good first step in building a clean and productive culture among coastal communities. In fact, some participants expressed their intention to transmit the knowledge gained to family members and neighbors, so that knowledge does not stop at one group.

From the implementation of this activity, it is clear that there is a strong potential for sustainability. First, the interest and commitment of participants in continuing processing activities independently is very high. Some of them have even formed small groups to continue production together. Second, the availability of abundant and sustainable raw materials is its own strength. Considering that fishermen's activities take place every day, the supply of fish and shell waste will continue to exist and can be managed regardless





of the season. Third, this activity is in line with the local government's program in encouraging the development of a creative economy based on local resources and sustainable environmental management. With the support of the government or partners such as fishermen's cooperatives, this training can be continued in the form of business assistance, assistance with production tools, and market access.

In addition, this activity also has the potential to be replicated in other coastal areas with similar characteristics. By compiling training modules and documentation of the production process that are easy to understand, similar programs can be applied by fishing communities in various regions that also face the problem of marine product waste and low added value of fishery products. In fact, further development opportunities are also wide open, such as processing shells into ready-to-use broths, mixtures of food additives. Overall, this service activity has had a wide impact, not only in economic aspects, but also in social and environmental aspects. Participants not only acquire new skills, but also have a new awareness of the importance of comprehensive management of marine resources. With proper follow-up, cross-sectoral collaboration, and strengthening local institutions, this activity has the potential to become a sustainable and inspiring model for empowering coastal communities.

CONCLUSION

Community service activities entitled *"Increasing the Added Value of Marine Products: Processed Fish Diversification Training for Fishermen Groups in Tanjung Riau Fishing Villages through the Shell Waste Treatment Approach"* successfully demonstrated that an integrated approach that combines economic, environmental, and social aspects is able to answer the real challenges faced by coastal communities. One of the main focuses of this activity is the use of shrimp shell waste that was previously unused and actually contributes to environmental pollution in coastal areas. So far, seafood such as shrimp caught by fishermen in Tanjung Riau is only sold in fresh form without further processing. This causes the economic value obtained by the community to be relatively low, especially during the harvest. On the other hand, shrimp shell waste resulting from the cleaning or consumption process is simply dumped into the sea or coast, resulting in an unpleasant odor and lowering the quality of environmental sanitation. Based on these conditions, the training program is designed to not only increase the added value of marine catches, but also educate the public about the potential of waste utilization into products of economic value. Through a practical and participatory approach, the trainees were invited to process seafood into ready-to-





consume products such as *prawn bisque*, which is a thick soup made from shrimp heads and shells processed with vegetables and spices. This product shows that the previously discarded part turns out to have a distinctive taste and aroma that has great potential for the culinary market. In addition, participants were also trained to make *dry prawn powder* (dried shrimp powder), which is produced from drying and smoothing shrimp shells. This product can be used as a natural flavoring (umami booster), a mixture of cooking spices, or even raw materials for other processed food products.

The results of the training show that the community is beginning to understand that waste can not only be processed, but also commercialized. In addition to improving technical knowledge about food production, this training also includes aspects of simple packaging, labeling, and simulation of calculating the cost of production, so that participants have a basic idea of selling their products to local stalls or cooperatives.

The success of the training was shown by the emergence of the initiative of participants to directly try to make products in their respective homes, as well as the enthusiasm of housewives to make this skill a side business. One of the groups even expressed its intention to form a joint business unit so that the production process could be carried out more consistently and on a larger scale. From an environmental perspective, the use of shrimp shell waste into *prawn bisque* and *dry prawn powder* has been proven to reduce the volume of organic waste that previously polluted the environment. This is in line with the spirit of the circular economy, where waste is no longer considered the end of the production chain, but as the beginning of a new value chain. With active community involvement and support from local leaders, this activity provides evidence that a contextual approach based on local potential can be a sustainable empowerment strategy. To ensure the sustainability of the program, further support from policy stakeholders is needed, both in the form of advanced training, market access, and production equipment assistance. Thus, Tanjung Riau can become a model for the development of micro-businesses based on marine products and waste, which not only improves the welfare of the community, but also maintains the preservation of the coastal environment.

SUGGESTION

This activity can be sustainable and have a long-term impact, further assistance is needed in the form of entrepreneurship training, product packaging, and access to local and digital markets. It is also necessary to involve local governments, fisheries offices, and local cooperatives to help strengthen the institutions of business groups





formed. In addition, increasing the capacity of production tools and the use of simple technology will be very helpful in improving the efficiency and quality of the products produced. Finally, it is suggested that a similar approach can be replicated in other coastal areas with similar socio-economic conditions, so that the benefits of this activity can reach a wider range of coastal communities in order to support economic resilience based on local resources that are environmentally friendly.

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