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Diversification Of Payus Fish Fishery Products To Improve Blue Economy In Lontar Village

Diversifikasi Produk Perikanan Ikan Payus Untuk Meningkatkan Ekonomi Biru Di Desa Lontar

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Abstract

This article discusses the diversification of payus fish-based fishery products in Lontar Village as a strategic step to support the blue economy and improve the welfare of coastal communities in a sustainable manner. The research was conducted using the Asset-Based Community Development (ABCD) approach, which utilizes local potential, such as payus fish resources. Activities focused on making fish jelly involving Posyandu cadre women and PKK women. Activities include counseling on the importance of fish consumption, training on product diversification (fish jelly), production trials, community assistance in processing, and evaluation of program results. Data were collected through surveys, interviews, and participatory observations, and the success was measured using indicators of increased skills, production, income, and nutritional impacts. The program succeeded in improving community skills in fish processing by 80% and producing 50 kg of fish jelly per month. Income increased by an average of 15% in the first three months, while fish consumption levels in Lontar Village increased by 20%. In addition, the stunting rate among children under five in the village decreased by 5% in one year. The program also led to the formation of two new micro-enterprise groups based on fish processing, with the application of environmentally friendly principles such as the utilization of almost all parts of the fish to reduce waste. Conclusion: Payus fish-based product diversification in Lontar Village not only provides economic benefits in the form of increased income and the opening of new business opportunities, but also has a positive impact on public health and environmental conservation. By applying blue economy principles, this program is a sustainable development model that can be replicated in other coastal areas. Continuous collaboration between the community, government, and private sector is needed to maintain the sustainability and expansion of the program's impact.

Keywords*: product diversification, payus fish, fish jelly, blue economy, Lontar Village*

Abstrak

Artikel ini membahas diversifikasi produk perikanan berbasis ikan payus di Desa Lontar sebagai langkah strategis untuk mendukung ekonomi biru dan meningkatkan kesejahteraan masyarakat pesisir secara berkelanjutan. Penelitian dilakukan dengan pendekatan Asset-Based Community Development (ABCD), yang memanfaatkan potensi lokal, seperti sumber daya ikan payus. Kegiatan di fokuskan pembuatan fish jelly yang melibatkan ibu ibu kader Posyandu dan ibu ibu PKK. Kegiatan meliputi penyuluhan tentang pentingnya konsumsi ikan, pelatihan diversifikasi produk (fish jelly), uji coba produksi, pendampingan komunitas dalam pengolahan, hingga evaluasi hasil program. Data dikumpulkan melalui survei, wawancara, dan observasi partisipatif, serta diukur keberhasilannya menggunakan indikator peningkatan keterampilan, produksi, pendapatan, dan dampak gizi. Program ini berhasil meningkatkan keterampilan masyarakat dalam pengolahan ikan sebesar 80% dan menghasilkan produk jelly ikan sebanyak 50 kg per bulan. Pendapatan meningkat rata-rata 15% dalam tiga bulan pertama, sementara tingkat konsumsi ikan di Desa Lontar naik sebesar 20%. Selain itu, angka stunting pada anak balita di desa tersebut menurun sebesar 5% dalam satu tahun. Program ini juga mendorong pembentukan dua kelompok usaha mikro baru berbasis pengolahan ikan, dengan penerapan prinsip-prinsip ramah lingkungan seperti pemanfaatan hampir seluruh bagian ikan untuk mengurangi limbah. Kesimpulan: Diversifikasi produk berbasis ikan payus di Desa Lontar tidak hanya memberikan manfaat ekonomi berupa peningkatan pendapatan dan pembukaan peluang usaha baru, tetapi juga memberikan dampak positif terhadap kesehatan masyarakat dan pelestarian lingkungan. Dengan penerapan prinsip ekonomi biru, program ini menjadi model pembangunan berkelanjutan yang dapat direplikasi di wilayah pesisir lainnya. Kolaborasi berkelanjutan antara masyarakat, pemerintah, dan sektor swasta diperlukan untuk menjaga keberlanjutan dan perluasan dampak program.

Kata kunci*: diversifikasi produk, ikan payus, fish jelly, ekonomi biru, Desa Lontar*

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1. INTRODUCTION

Fisheries is one of the important sectors in Indonesia's economic development, especially in coastal areas and small islands. Lontar Village, as one of the coastal villages, has great potential in developing the fisheries sector, especially related to payus fish. Payus fish is one of the abundant marine catches of local fishermen (Azizah et al., 2022). Payus fish is a type of predatory or dangerous fish that is often found (Mufarihat et al., 2019). However, the utilization of this fishery resource has not been optimal, so it has not provided a significant economic impact for the local community. The lack of community knowledge on payus fish management results in payus fish having low economic value. Therefore, it is necessary to do alternative processing of payus fish without reducing the nutritional content of payus fish which can be done independently at home (Susilowati et al., 2021).

Community knowledge, especially women and mothers about diversification or food diversity based on fish and other fishery products is still very limited, so it must be improved through technology transfer (Lena et al., 2021). Diversification of fishery products is one of the important aspects to increase the added value of fish catch and cultivation. Product diversification is a strategy to create new products that are more expensive than existing products (Amalia et al., 2022). Product diversification includes preparation, capital, promotion, creativity, and innovation (Wahyuningsih et al., 2023). The main problem perceived is the low level of community knowledge, especially related to the production of quality and commercially valuable fish products. Product diversification can improve efficient strategies for food security (Saboori et al., 2023). People process fish products without any new innovations, usually they make processed fish products by frying or grilling (Sugiyanto et al., 2023). By processing payus fish into various high-value products, it is expected to increase the income of fishermen and business actors in Lontar Village.

The concept of the blue economy, which emphasizes the sustainable use of oceans and marine resources, has become an important paradigm for global economic development (Adnan et al., 2023). The blue economy enhances significant sustainability systems for coastal life (Ding, et al., 2024). In addition, the blue economy can also support economic growth, regulate climate and support the welfare of coastal communities (Adnan et al., 2023). Along with the need for sustainable economic growth, the role of marine and marine resources is becoming increasingly important (Dian et al., 2023). Not many studies have integrated the creative economy and the blue economy. So far, many studies have focused on each concept (Hasrullah, 2024). By applying the principles of blue economy in the diversification of payus fish products, it is hoped that a balance can be created between economic growth and environmental preservation in Lontar Village.

This study aims to assess the potential for diversification of payus fish-based fishery products in Lontar Village, as well as analyze its impact on improving the community's economy within the blue economy framework. Currently, food diversification is considered the best solution in solving the problem of fulfilling food needs (Heryadi et al., 2022). To overcome this problem, it is necessary to formulate a strategy that can then become a guideline in managing the fisheries sector and be able to attract investors to cooperate and finance commercial activities (Imelda et al., 2019). The results of the study are expected to provide policy recommendations and strategies for sustainable development of the fisheries sector in coastal areas.

2. METHODS AND MATERIALS

The methods carried out in this service program activity, namely :

1. Counseling

   Submission of material to the people of Lontar Village about fond of eating fish by explaining the importance of processing fish through diversification of processed products, the role of fish protein for pregnant women and children, proposing a varied, nutritious, balanced and safe diet (B2SA), accelerating diversification of food consumption so that it does not focus on one type of food, namely how to make fish jelly.
2. Trial

   Trials in the manufacture of diversified processed payus fish products into nuggets are one of the important steps to produce quality processed products and are in demand by

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the market. This process involves various stages starting from the selection of raw materials and appropriate formulations to determining the optimal processing method. In this trial, the payus fish used must be fresh and meet quality standards. In addition, the trials also focused on the formulation of seasonings and additives used in the nugget batter, such as the addition of seaweed flour to the nugget batter which can change the texture of the nuggets to be more chewy, but when the batter is added with seaweed flour, it gives a stinging effect to the eyes. Each trial result must be evaluated comprehensively, both in terms of taste, texture, and product durability. This trial also opens up opportunities to create variations of nugget products by adding other ingredients such as seaweed flour to increase nutritional value.

3. Training

   This activity was carried out for PKK women and Posyandu cadre women in Lontar Village. The training took place after the women attended counseling which aimed to diversify processed fish products by making fish jelly. The purpose of this training is so that PKK women and Posyandu cadre women in Lontar Village can know the benefits and importance of processing varied food ingredients. Fish meat can be consumed in large quantities according to the recommended amount to reduce stunting rates in children in Lontar Village and can increase mothers' income to support the family economy.

4. Mentoring

   This activity was carried out to both partners, including counseling and training on how to make processed diversified fish jelly fishery products made from payus fish meat.

5. Evaluation

   This activity is carried out after all counseling, training and mentoring activities are completed through an assessment of the level of product liking by tasting the processed fish jelly that has been made. This research also adopts the Asset-Based Community Development (ABCD) approach. The ABCD method is a sustainable empowerment method based on community assets, strengths, and potentials (Setyawan, 2018). The assets in question are the wealth owned by the community, this wealth can be used to implement empowerment programs (Sidik et al., 2023). ABCD was used in this study to identify and utilize the local potential of Lontar Village, especially related to fishery resources and community capacity. The steps of applying ABCD in this study include :

   a. Asset Mapping: Identifying the assets of Lontar Village, including natural resources (such as payus fish), human resources (community skills), and existing infrastructure.
   b. Relationship Building: Building and strengthening relationships between various parties in the community, including fishermen, PKK women, and the village government.
   c. Asset Mobilization: Mobilize the assets that have been identified for the development of processed payus fish products, especially in making fish jelly.
   d. Information Sharing: Disseminating knowledge and skills related to payus fish processing through counseling and training.
   e. Community Empowerment: Encouraging active community participation in the process of product development and marketing of fish jelly.

The application of the ABCD method allows the research to optimally utilize local potential, while ensuring the sustainability of the fisheries resource-based economic development program in Lontar Village. Community economic development must start by embedding the strengths and potentials of the local community (Ali et al., 2022). The ABCD method was integrated with other previously mentioned methods (extension, trials, training, mentoring, and evaluation) to create a comprehensive approach to the development of processed payus fish products and community empowerment in Lontar Village. The main research method is direct observation in the field, interacting with the community while testing several times. The secondary research method is documentation.

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Table 1. Provides a summary of the research activity plan and success indicators and Activity plan and success indicators

No.	Activity Plan	Success Indicators
1.	**Survey and Asset Mapping (Week 1-2)** - Conduct field survey in Lontar Village - Identifying potential payus fish resources - Mapping community assets and available infrastructure	**Community Participation** - At least 80% of invited participants attend each activity - At least 20 PKK mothers and Posyandu cadres are actively involved in the program
2.	**Program Socialization (Week 3)** - Hold meetings with community leaders and village government - Explain the purpose and benefits of the program to the community - Collect feedback and suggestions from the community	**Improved Knowledge and Skills** - 90% of participants can demonstrate making fish jelly correctly - Increase in pre-test and post-test scores of fish nutrition knowledge by 30%
3.	**Healthy Eating Fish Counseling (Week 4)** - Provide education about the benefits of fish consumption - Explained the economic potential of payus fish processing	**Fish Jelly Production** - Production of at least 50 kg of fish jelly per month by community groups - Consistent product quality that meets food safety standards
4.	**Fish Jelly Processing Workshop (Week 5-6)** - Organize a workshop on making fish jelly - Provide training on food hygiene and safety - Conduct hands-on practice of making fish jelly	**Economic Impact** - Increase in income of program participants by at least 15% in 3 months - Establishment of at least 2 micro business groups based on processed payus fish
5.	**Production Assistance (Week 7-10)** - Accompanying community groups in the production of fish jelly - Provided technical assistance and suggestions for improvement	**Program Sustainability** - 70% of participants continue to produce fish jelly independently after the program ends. - There is a plan to develop other variants of processed payus fish products
6.	**Packaging and Marketing Training (Week 11)** - Provide training on good packaging techniques - Teaching product marketing strategies	**Community Nutrition Impact** - Increased fish consumption in Lontar Village by 20% in 6 months - Decreased stunting rate among children in Lontar Village by 5% in 1 year
7.	**Evaluation and Monitoring (Week 12)** - Conduct an overall evaluation of the program - Collect feedback from program participants	**Adoption of Blue Economy Principles** - Implementation of at least 3 environmentally friendly practices in the production process - Utilization of 90% of payus fish parts to reduce waste

3. RESULTS AND DISCUSSION

3.1 Survey Of Fish Auction Sites

We surveyed the fish auction site by going directly to a place that is one of the livelihoods of the Lontar Village community which is managed specifically by fishermen. This auction place

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collects and provides catches from several fishermen every day such as payus fish, milkfish, sea catfish and shrimp which will later be traded to the surrounding community. The condition of the facility still looks very traditional because it is only sold on the floor using a cool box containing several ice blocks.

Figure 1. *Survey Of Fish Auction Sites at Lontar Village*

3.2. Sozialization of The Love of Eating Fish at The Lontar Village Office

Socialization was conducted to provide an understanding to the Lontar Village community of the importance of consuming fish. Socialization can increase public awareness about the importance of fish consumption and its health benefits, as well as to encourage creative economy and entrepreneurship through the utilization of local fisheries potential (Sirait et al., 2024). This fish processing training program is designed to improve community skills in processing fishery products, and based on the data displayed in the graph, the results are good. Before the training started, the community's skill level in fish processing was at a relatively low level, namely around 20%, but after participating in the training program, there was a very significant increase, reaching 100%. This dramatic increase shows that the training program is very effective in transferring knowledge and skills to participants, enabling them to fully master the fish processing techniques taught, which in turn can increase the added value of fishery products and the economic potential of the community. The following data is presented in a graph.

Figure 2. Graph of Community Skills Improvement in the Fish Processing Matrix

Fish socialization activities can be an important component that can help increase demand for processed payus fish products developed in Lontar Village, while supporting blue economy goals by encouraging sustainable fish consumption.

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Figure 2. *Sozialization of The Love of Eating Fish*

3.3. Counseling on Diversified Processed Products

The counseling conducted aims to provide information on knowledge and skills about processing fish jelly fishery products. Counseling can provide better knowledge and experience to participants (Nazwirman et al., 2020). Fish processing extension activities can increase the income of the Lontar Village community by developing unique and quality processed fish jelly products. This can improve the welfare of the people of Lontar Village.

Figure 3. *Counseling on Fish Jelly Preparation*

3.4 Training and Mentoring in Making Processed Payus Fish Fishery Products (fish jelly)

Training on fishery product diversification is carried out through training with demonstration and demonstration methods. Training is intended to help participants gain better knowledge, abilities, and skills so that they can effectively carry out their duties and responsibilities (Cahya et al., 2021). The training begins by providing knowledge to PKK women and Posyandu cadre women about what raw materials are suitable for making processed fish jelly products and how to make processed fish jelly made from payus fish.

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Figure 4. *Training with PKK and Posyandu cadres*

At the mentoring stage, PKK women and Posyandu cadres then made processed fish jelly products accompanied by the PPK ORMAWA team. Processing fish jelly made from payus fish can make children interested in eating processed fishery products because of its distinctive shape like nuggets and has a high nutritional content that is beneficial for the health of the body, especially to reduce stunting in early childhood. Payus fish jelly products that have been made produce attractive colors and have a soft texture. When viewed from the appearance of payus fish jelly, it is no different from other nuggets, but if consumed, it will feel different, namely the taste of the payus fish. This program is a breakthrough for students in realizing the tri dharma of higher education in the fields of research and service. We involved the community, namely the formation of a Processing and Marketing Group (POKLAHSAR) which was approved by the Head of the Banten Province Maritime and Fisheries Service with the assistance of the Lontar Village Head.

Figure 5. *Assistance on How to Make Fish Jelly Products*

Equipment and Materials: Participants were introduced to various kinds of equipment and materials for making fish jelly including how to make it. We have innovated the remaining trash fish, namely by-catch, to be processed into crispy skin, for feed for payus fish ponds, and used as surimi. Common equipment used to make processed fish jelly includes a mill or chopper, steaming

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pot and vacuum. Meanwhile, participants were also introduced to various ingredients for making fish jelly, including payus fish, chicken eggs, carrots, butter, wheat flour, fine bread flour, coarse bread flour (crumble), cornstarch, spices such as shallots and garlic, ice cubes, cooking oil and several flavorings that will add to the taste of processed fish jelly products. How to Make Fish Jelly :

1. Preliminary process. This process involves weeding and filleting
   a. Weeding
      First brush the fish, brushing the scales from the tail to the head without damaging the flesh. Then the fish is cleaned and the scales are removed. There is no cut on the fish head when the lower part of the gills is cut. Next the belly of the fish can be cut from the anus to the gills without damaging the viscera. The gills and viscera are removed. Brush the inside of the belly with the tip of a knife to remove any remaining blood. After that, wash the fish thoroughly.
   b. Filleting
      The rib meat is sliced from head to tail to form a fillet. The flesh remaining on the bones is scraped off with a knife. The skin on the fillet is then peeled off and cut. In making fish jelly, the skin is not used. The next process is to grind the filleted meat to get a smooth meat texture.
   c. Mixing Fish Jelly Ingredients
      Combine the payus meat that has been pureed using a blender or chopper earlier with the grated carrots. Add spices and binders (such as tapioca flour or wheat flour) little by little while stirring well. Use a chopper to mix all the ingredients that have been included.
   d. Formation of the Same Nugget
      Prepare a baking sheet or tray that has been lined with plastic wrap. Pour the batter into the pan and flatten it to a thickness of about 1-1.5 cm. To form uniform pieces, use a square, triangle or special nugget cutter. Then steam the dough that has been put in the pan for 15-20 minutes.
   e. Wet Dough Coating
      Prepare 3 separate containers: wheat flour, and bread flour (crumble). Dip the nugget pieces into the flour and finally coat them evenly with the breadcrumbs. Pat the coated nuggets to ensure the breadcrumbs stick well.
   f. Fish Jelly Fryer
      Heat cooking oil in a skillet over medium heat. Fry the nuggets in enough oil to ensure they cook evenly. Make sure not to put too many nuggets so that they can be cooked perfectly and maintain the stability of the oil heat. Once cooked, remove and drain.
   g. Serving
      Serve the payus fish nuggets warm with chili sauce or mayonnaise sauce. Payus fish jelly can be served as a main meal or side dish.
   h. Press Using Vacuum
      Fish Jelly which will then be preserved in the freezer must be vacuumed first, the aim is to increase the durability of the fish jelly product.

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Figure 6. *Unpackaged and prepackaged nuggets*

Fish consumption (blue) has increased significantly, followed by an increase in people's income. What is most striking is the stunting rate (red), which was initially at the highest level of around 100, but was successfully reduced to around 95 after the program was implemented. The program we have implemented indicates a positive impact by increasing fish consumption and community income, while simultaneously reducing stunting levels, although the reduction in stunting is not as significant as the increase in the other two indicators. The following data is presented in a graph.

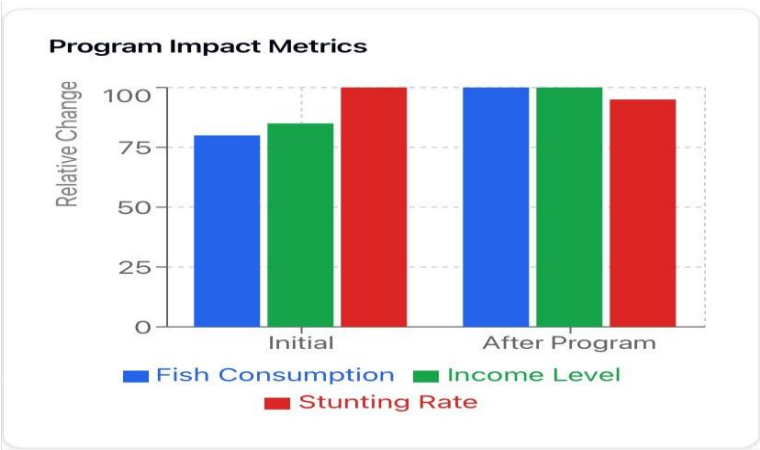

Figure 2. Graph of Program Impact Metrics

4. CONCLUSION

This research successfully demonstrated that diversification of payus fish into fish jelly products significantly improved economic welfare and nutritional status, supporting the reduction of stunting in coastal communities in Lontar Village. Through the integration of training, extension, and mentoring, the program enabled the community, especially women, to process payus fish into innovative high-value products. This initiative results in increased income, better food security, and more optimal utilization of marine resources. The program is also in line with blue economy principles, encouraging sustainable practices that balance economic growth with environmental preservation.To ensure the sustainability of the payus fish diversification program in Lontar Village, ongoing mentoring, improved processing infrastructure, and training in fisheries-based product innovation are needed. Collaboration with the government and private sector can support product financing, marketing, and distribution. Continued support and collaboration from stakeholders is needed to ensure the long-term sustainability of this initiative. Promotion through digital media and local marketing needs to be expanded to increase competitiveness. Regular monitoring is also important to assess the success of the program and refine its approach, while supporting stunting reduction initiatives. With these steps, the program can contribute to increased economic welfare, improved nutrition, and sustainable environmental preservation.

5. ACKNOWLEDGMENTS

This research shows the successful implementation of the payus fish diversification program into fish jelly products in Lontar Village which has had a positive impact on various aspects of community life. Through an Asset-Based Community Development (ABCD) approach and a series of activities that include counseling, training and mentoring, this program has succeeded in increasing community skills in fish processing, encouraging increased income and contributing to improving community nutritional status, especially in efforts to reduce stunting rates in children.

This program also proves that optimal use of local resources can create added economic value while preserving the environment in accordance with blue economy principles. The success of the program is not only visible from the economic aspect, but also from the formation of micro-enterprise groups based on fish processing and increasing public awareness of the importance of fish consumption. This shows that a comprehensive and sustainable community empowerment approach can be a model for coastal economic development that can be replicated in other regions, while still taking into account the local potential and characteristics of each region.We would like to express our deepest gratitude to all those who have contributed to the verification and processing of this payus fish. Special thanks to the PPK Ormawa team and supervisors who have provided significant support and guidance. Our gratitude also goes to all parties involved in the data and information verification process that has helped ensure that the results of this payus fish processing can be accounted for. The cooperation, commitment, and dedication of all are greatly appreciated and are key to the success of this project.

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