

Community Empowerment Through Environmentally Friendly from Fishing



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ABSTRACT: Smoked fish is one of the processed fish products that are commonly found in Penatarsewu Village, Tanggulangin District, Sidoarjo Regency. Smoked fish is a fish product that has gone through a smoking process. Fish smoking is a food processing technology that has been known for a long time. Smoking is done by penetrating volatile compounds from burning wood in fish [3] which can produce products with specific flavors and aromas [4]. So far, the production of smoked fish carried out in Penatsewu Village is still using traditional methods which are considered less hygienic and the results obtained are not uniform [5]. Thus the quality of smoked fish produced is inconsistent and there is no guarantee of the safety of smoked fish products for consumers [6]. Therefore, an environmentally friendly fumigation device was developed. This fish smoking device called environmentally friendly is a modern smoker which is expected to be a solution to problems in the production of smoked fish which has not been optimal so far. In the process, smoking using an environmentally friendly smoker is more hygienic than traditional smoking [7]. Smoking with an environmentally friendly smoker has a longer shelf life than traditional smoking. The use of different types of smoking fuel can affect the quality of smoked fish produced [8]. There are several commodities that produce waste that can be used as fuel for smoke, including siwalan coir, corn cobs and coconut shells.

KEYWORDS: Empowerment, community, smoked fish, environment

INTRODUCTION

Empowerment is an effort to generate community strengths and potentials that rely on local communities through a participatory approach and learning together. In terms of strategy, approach and process, empowerment is a movement and approach based on local communities and based on local capacity, which incidentally can be incorporated into the framework of reform towards community independence. The rationale for community empowerment is to advance the ability of rural communities to independently manage their community affairs. In terms of empowering village communities, the Village Law places an agreement with all villagers as a guide for the Village Government in managing its authority to administer and regulate the Village. Empowerment is the process of facilitating community members together on a common interest or business which can collectively identify targets, pool resources, mobilize an action campaign and therefore help regroup forces within the community. (Andjar Sari, 2021)

Empowerment is a process. However, the process can be seen from the indicators that accompany the empowerment process towards success. To find out the achievement of empowerment goals operationally, it is necessary to know various indicators of empowerment that can indicate a person or community is empowered or not. In this way we can see that when a social empowerment program is given, all efforts can be concentrated on what aspects of the change target (eg poor families) need to be optimized. The success of community empowerment can be seen from their empowerment which involves economic capacity, ability to access welfare, and cultural and political capabilities. These three aspects are associated with four dimensions of power, namely: 'power within' (power within), 'power to' (power to), 'power over' (power over) and 'power with'.

So, village community empowerment can be understood from several perspectives. First, empowerment is interpreted in the context of placing the standing position of the community. The position of the community is not the object of the beneficiaries (beneficiaries) who depend on gifts from outside parties such as the government, but in the position as subjects (acting agents or participants) who act independently. Acting independently does not mean being free from state responsibility. The provision of public services (health, education, housing, transportation and so on) to the community is certainly a given task (obligation) of the state. An independent society as a participant means the opening of space and capacity to develop creative potential, control the environment and its own resources, solve problems independently, and participate in determining the political process in the realm of the state. Communities participate in the development process and governance

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Sidoarjo is known for its processed shrimp and milkfish. Usually both are served by smoking. But not only shrimp and milkfish are smoked. There is also smoked tilapia fish which is no less tasty than smoked milkfish. One of the centers of smoked tilapia fish business in Sidoarjo is in Penatar Sewu Village, Tanggulangin District. In this village, most of the people smoke mujair fish. The activity of smoking tilapia fish usually starts around 06.00 until 13.00 WIB. Before smoking, the fresh tilapia fish that have just been obtained from the pond are then cleaned. Then washed with running water. Once neatly arranged then smoked on an iron grill in the furnace. This mujaer fish is cleaned manually before being smoked. After washing, just smoked. (Bimantara, 2015).

The process of smoking tilapia fish takes three hours. This resident of Penatar Sewu Village RT 8 RW 2 admitted that he consumes 80 kg to 1.5 quintals of fresh tilapia fish every day. This fresh tilapia fish is obtained from a pond close to his house. If you want to get fresh mujaer fish in large quantities, you have to leave early at around 03.00 in the morning. If they go to the pond early, then they can start the smoking process earlier, which is around 07.00 am. This is because the smoking process takes three hours. The process of smoking mujaer fish is done with her husband, after becoming smoked fish then it is then marketed or sold to the market or to the customer. Usually sold to the Porong Market, while her husband sells by selling around the houses. Mrs. Sarofah explained that this smoked tilapia fish business has been running since 2014, continuing the business owned by her parents. Mrs. Sarofah admitted that the results were quite large. In addition to selling smoked fish to markets, he also received many orders, luckily enough. Fresh tilapia fish are bought per kilo for Rp. 30 thousand, while after becoming smoked tilapia, they are sold for Rp. 60 thousand per kilo. Per day you can earn between Rp. 300 thousand to Rp. 500 thousand.

Besides mujaer fish, it does have a delicious and savory taste, in addition to the soft and tender texture of the meat. Mujaer fish is rich in protein, energy, fat, calcium, phosphorus and iron. The high nutritional content of mujaer fish plays a role in helping the growth of the fetus in the womb and is very good for the heart because it is low in fat. Consuming this one fish makes it easy to increase your nutritional intake because this fish is widely available and cheap compared to tuna, salmon and other types of fish. (Darianto, 2018)

Despite its popularity, mujair is not only cheap and easy to get. Mujair also contains many health benefits, one of which is rich in protein. Mujair is a source of high quality protein and contains all the essential amino acids the body needs (Lukman Hudi, 2021). Mujair is rich in protein, which is about 26 grams of protein in 100 grams of tilapia fish pieces. For reference, in 100 grams of chicken, there are about 31 grams of protein, in 100 grams of salmon there are 19 grams of protein, and in 100 grams of beef there are 22 grams of protein. Eating more fish such as tilapia, can not only help us avoid eating too much meat. However, we will get an increase in omega-3 fatty acids that affect brain function. (Nurmianto, 2018)

METHOD

The implementation of this activity uses the Participatory Action Research (PAR) method, to explore the understanding of partners in a participatory manner, namely by involving both aspirations and participation from the community (Muhtarom, 2019). This activity is carried out through three stages, namely preparation, implementation, and evaluation. In the preparation stage, the service team coordinated and disseminated the program to mentoring partners for Sidoarjo smoked fish crafters. The implementation stage in this service is carried out by training to increase production, marketing and sharia finance. Meanwhile, in the evaluation, the service team conducted a pre-test and post-test on the trainees.

The method offered in this program is the provision of training aimed at increasing production and marketing and introducing sharia finance and towards sharia-based cooperatives. In this training there will be a test which in this test aims to find out and analyze the level of success of the training to achieve the initial goal, in the process of production, marketing and Islamic financial management. The technique we use to determine the level of success is commonly called the paired sample T-Test technique, which is a technique used to determine the difference between the pre-test and post-test that has been given to the trainees.

RESULTS AND DISCUSSION

Based on Law no. 6 of 2014 concerning Villages, Article 1 states that Villages are villages and traditional villages or what is called by another name, hereinafter referred to as Village, is a legal community unit that has territorial boundaries that are authorized to regulate and manage government affairs, the interests of the local community based on community initiatives, rights of origin, and/or traditional rights that are recognized and respected in the government system of the Unitary State of the Republic of Indonesia. The position of the Village is reflected in Article 2 and Article 5 of the law, as follows that the Village is the implementation of Village Government, implementation of Village Development, Village community development, and Village community empowerment based on Pancasila, the 1945 Constitution of the Republic of Indonesia, the Unitary State of the Republic of Indonesia, Republic of Indonesia, and Bhinneka Tunggal Ika". The above provisions confirm the position of the Village as part of the Regional Government. The Village Law establishes village arrangements as a combination of the functions of self-governing community and local self-government. Self governing community of indigenous peoples who have their own unique government and are not bound by other governments. Meanwhile, local self-government is a village government that has a position and authority that is identical to an autonomous region, and has the right and opportunity to develop themselves and catch up with due regard to positive and conducive local community values. With the principle that the village government and indigenous peoples have the right and

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opportunity to develop themselves which is the core of empowerment. The government in regulating villages with Article 4 of the Village Law encourages initiatives, movements, and participation of village communities for the development of village potentials and assets for mutual prosperity. Therefore, the village as a government can carry out empowerment activities for the village community.

The village government in the development program is required to empower the community. If the village government does not carry out an empowerment program, then the community can express their aspirations to encourage the creation of an empowerment program that must be carried out by the village government. Villages can utilize existing village community institutions in assisting the implementation of community empowerment functions (article 94 paragraph 1). Examples of village community institutions such as PKK, Dasawisma, religious institutions, cultural institutions, or economic institutions. At the rural area level, the village empowerment program is intended to increase access to services and economic activities (article 83 paragraph 3). Inter-Village cooperation programs at the regional level can be realized in the form of empowerment (article 92 paragraph 1 letter b).

The scope of village community empowerment activities, as regulated in the Minister of Home Affairs Regulation No. 114 of 2014 in article 6 includes: a. training in economics, agriculture, fisheries and trade, b. appropriate technology training, c. education, training, and counseling for the Village head, Village apparatus, and the Village Consultative Body; and D. community capacity building, including: - Village community empowerment cadres; - productive economic group; - women's group, - farmer's group, - poor community group, - fisherman's group, - craftsman group, - child care and protection group, - youth group; and - other groups according to village conditions.

The geographical condition of Tanggulangin District, Sidoarjo Regency is directly adjacent to 3 Districts, namely Candi District in the north, Candi District and Porong District in the east, Porong District in the south and Tulangan District in the west. Tanggulangin District is one of the sub-districts which is located ± 6 meters above sea level and between $7.48^\circ - 7.52^\circ$ south latitude and $112.67^\circ - 112.75^\circ$ east longitude with a distance of approximately 6 km from the capital city of Sidoarjo Regency. Administratively, Tanggulangin District is one of the districts with a large number of villages, namely 19 villages, namely: Randegan, Kedensari, Kalisampurno, Ketapang, Kedungbendo, Gempolsari, Sentul, Penatarsewu, Banjarasri, Banjarpanji, Kedungbanteng, Kalidawir, Putat, Ngaban, Kalitengah, Kludan, Boro, Ketegan, Long Algae. Smoked fish business centers in Sidoarjo are spread out in Sedati and Tanggulangin Districts. However, the largest is in Penatarsewu Village, Tanggulangin District, Sidoarjo Regency. Fish that are processed are not limited to milkfish, but almost all types of fish caught in the sea and aquaculture, such as mujair, catfish, and tuna. Different from the character of the village in general, almost every resident's house in Penatarsewu has a burning chimney. Some of the chimneys are made of iron, but others are built with red bricks mixed with sand and cement. White smoke, sometimes black, billowed from each chimney. The puff indicates the activity of the residents of the house who are wriggling in front of the roasting stove. It collided quickly with the red hot coals, before finally turning black into charcoal. In addition, the business of selling coconut shells and the business of selling ready-to-eat smoked fish. The business of smoking fish has been around for decades. However, recently, the business has developed into the economic backbone of its citizens. Nearly 80 percent of the 870 family heads are in this business. In fact, in one family, husband and wife often share roles, namely as fresh fish hunters and smoked fish sellers. Previously, local residents farmed and became agricultural laborers, both in rice fields and in ponds. Now, they are unable to meet the high market demand. No less than 11 tons of smoked fish are produced every day. This means that around 15 tons of fresh fish are supplied to Penatarsewu every day with a turnover of Rp. 550 million to Rp. 1 billion per day. The need for fresh fish can no longer be met by local farmers. On the other hand, smoked fish are sold in various traditional markets, such as Porong Market, Tanggulangin Market, Larangan Market, and Tulangan Market. Preserving fish can be done in various ways, one of which is by smoking it traditionally. In ancient times, fishermen smoked fish in a traditional and very simple way. So it takes quite a long time to complete the work. Smoking fish can indeed be done in various ways, both modern and traditional ways that still use simple tools.

The output targets that will be produced by the implementation of "Smoked Fish" MSME Service are:

1. Processing of smoked fish is of higher quality, reducing the water content of mujaer fish, so that smoked fish is more durable, not easy to smell, the appearance of smoked fish is flat and not black, the same level of maturity (not too cooked and not too raw), smoking time is longer faster than traditional smoking, so it is more efficient. .
2. Business process documents and operating standards and procedures (SOP) for partner business quality management based on ISO 9001: 2015.
3. Business management documents (production administration and finance) Sharia-based partners and able to obtain capital for business development.
4. New place as a showroom/display for smoked fish, production room, partner's raw material storage room.
5. New innovations in Appropriate Technology (TTG) modern eco-friendly smoking machines that are environmentally friendly, do not cause smoke, are more effective and efficient.

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Evaluation of program implementation is carried out through visits to Partners after Community Service field activities are carried out using interview and questionnaire methods:

1. Evaluation is carried out to post-training participants regarding their ability to process smoked fish using an environmentally friendly smoking machine.
2. Business process management and ISO 9001:2015 on quality management standards. Evaluation is carried out post-training on the accuracy of the preparation of documents/operating standards and procedures (SOP) of business processes and ISO 9001:2015 as well as understanding at the level of partner leaders and workers.
3. Increasing access to capital in the context of sharia-based business development and management. Evaluation is carried out after training on the accuracy of the preparation of sharia-based business management documents (production administration and finance) and the ability to obtain new capital for business development of Partners.
4. Efficient use of space through the design and layout of display rooms for new products, production rooms, raw material storage rooms, and Partner product storage spaces. Evaluation is carried out after the design and re-layout is carried out to increase sales and marketing of Partner products.
5. Efficiency of time and energy in terms of processing through TTG innovation of environmentally friendly fumigation machines. The evaluation was carried out after the application of TTG to the processing and processing speed and efficiency of smoked fish processing.

To maintain the continuity/sustainability of the activity results, after the implementation of field activities, the PKM program will be consolidated and synergized with the Industry and Trade Service Program (Disperdagin) and the Cooperatives and MSMEs Office (Dinkop and UMKM) of Sidoarjo Regency in the form of training assistance, further assistance, promotion, and participation in the exhibition of MSME products, with the support of APBD funds from Sidoarjo Regency to Penatarsewu Village, Tanggulangin District, Sidoarjo Regency so that the icon of the UMKM center for Smoked Fish products in Tanggulangin District remains famous and survives.

Technical Specifications of Smoked Fish Tool

This tool is easy to operate, the time used in each processing is faster (10-15 minutes) compared to traditional tools (3-6 hours), the capacity of the tool is 50 kg/process, the smoked fish results are more delicious because of the addition of spices, smoked fish lasts 3-5 days if liquid smoke is added, and smoked fish products are more hygienic because they are not contaminated by flies and dust. This tool is rust-resistant so that it will increase the productivity and income of the fish smoker. This tool functions as a smoked fish maker. The body is made of stainless steel. The heating system uses a stove. Smoke is produced by heating coconut shells and desiccated coconut husks. Smoked fish will be durable, so the marketing can be wider. The selling price is quite high due to the delicious taste of smoked fish.

Fish smoking oven machine is a machine that is useful in processing fish, especially to be used as food products. The function of this fish smoking oven is to make the fish dry by means of an oven or smoked at a certain temperature which will later be processed again according to production needs. This fish drying oven machine helps business actors in the field of fish processing by accelerating the process of smoking fish so that it can save costs and labor because the process is assisted by machines. This fish smoking oven machine uses LPG as fuel. This smoking oven machine uses stainless steel and double jacket materials. The standard capacity of the fish smoking oven is 50 Kg/6 Racks. The tools applied to Partners are in the form of a Special Oven for smoking fish using LPG. The advantage of this oven compared to traditional smoking is that the smoked fish will cook evenly. Fumigation is one way for preservation by utilizing a heat source that comes from the smoke from burning wood or other materials. The preservation process utilizes natural ingredients that provide a distinctive taste and aroma. In the past, the purpose of smoking was to preserve fish or other materials where the smoke was obtained from burning wood or other organic materials (Adawiyah, 2007).

The principle of fumigation is to use a combination of drying and the provision of natural chemical compounds from the combustion of wood, combustion will form smoke in the form of steam and granules and produce heat. The smoked compound sticks to the surface of the fish so that a distinctive aroma and taste is formed in the product and the color becomes golden or brownish. However, fumigation is suspected to have carcinogenic compounds. Several carcinogenic groups in food include polycyclic aromatic hydrocarbon (PAH) compounds in smoked fish, N-nitroso compounds (NNC) in smoked meats, and heterocyclic aromatic amines (HHA) in grilled or grilled fish and meat (Adawiyah, 2007). One of the carcinogenic PAH compounds is benzo(a)pyrene compound (Ghazali et al., 2014). For this reason, other methods are used to reduce these impacts by different processing methods. According to research by Ghazali et al., (2014) the smoking method with liquid smoke is safer than the smoking method exposed directly to smoke. Polycyclic aromatic hydrocarbon (PAH) compounds are formed during the processing, the fat content in fish and incomplete combustion processes can trigger the formation of these compounds (Menichini and Bocca, 2003 in Ghazali et al., 2014). The raw material for liquid smoke used is coconut shell. Liquid smoke comes from the smoke of burning coconut shells that have been distilled and goes through a heating process and through a process of filtering tar and other particles. The seven components present in liquid smoke are phenol, 3-methyl-1, 2-cyclopentadien, 2-methoxyphenol, 2,6-dimethoxy-cyphenol, and 2,5-dimethoxy benzyl alcohol, all of which are soluble in ether. 1996 in Triwijaya et al., 2013).

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The value of the water content in the product can affect the durability. The higher the water content value, the more easily a food product will be damaged. Based on Table 3, sample D has a lower moisture content value than the control. This is due to differences in smoking methods. The process of withdrawing water from fish body tissue in sample D using an oven is more optimal. While the control sample has a water content value above the SNI limit, this is due to the heating time which is not long enough and the temperature used is not controlled. According to Swastawati et al., (2013), smoked fish products using the smoking cabinet method still have a high water content exceeding the SNI limit due to the unstable evaporation process. The smoking cabinet and traditional smoking methods have almost the same principle, namely that the fish is exposed directly to smoke. The value of the water content of smoked fish according to SNI is 60%. Moisture content is influenced by several factors including the smoking process, such as temperature, humidity, type and condition of fuel and concentration used. High water content can cause bacteria, molds, and yeasts to enter food products and breed so that fish products are easily damaged (Triwijaya et al., 2013).

Sources of contamination that can pollute the sea waters of East Java can be caused by the presence of environmentally unfriendly wastes resulting from factory activities. Industrial processes that use Cd in their activities include electroplating (electrical coating) and galvanization processes, alloy manufacturing processes, color pigments in paints, ceramics, plastics, plastic stabilizers, cathodes for Ni-Cd in batteries, photographic materials, manufacture of TV tubes, rubber, soap, fireworks, textile printing (BPOM Regulation, 2009 in Hananingtyas, 2017. It is known that heavy metal cadmium (Cd) analysis did not detect the presence of heavy metal Cadmium (Cd) processed by smoked catfish. This is probably caused by the distance between sources of heavy metal contamination and fishing locations that are far apart. According to Nilasari & Wibowo (2018), the farther the sampling location is from the contamination source, the smaller the metal concentration in milkfish samples. According to Luoma and Rainbow (2008) in Purbonegoro (2014), the process of accumulation of heavy metals by organisms is complex, several factors including the type and specific conditions of the organism, environmental conditions, and route of exposure (water, sediment, food). The eating behavior of fish is one of the most influential on the accumulation of heavy metals in high concentrations. Catfish is a type of demersal fish, and is included in non-predatory fish. Heavy metal concentrations in non-predatory fish tend to be lower than in predatory fish (Hajeb et al., 2009)

CONCLUSION

Village community empowerment is an effort to improve the living standards and welfare of rural communities through the establishment of policies, programs, and activities that are in accordance with the essence of the problem and priority needs of the village community. This empowerment emphasizes the process of giving or transferring some power, strength or ability to the community so that individuals become more empowered. Empowerment is also a process of stimulating, encouraging or motivating individuals to have the ability or empowerment to determine what they choose.

To increase knowledge, the service staff has carried out training related to product quality, both raw mujaer fish and smoked mujaer fish, so that the quality of smoked fish is maintained. How to reduce the water content, so that the smoked fish doesn't smell and rot quickly. The training was held at the Penatar Sewu Village Hall, Tanggulangin District, by inviting Smoked fish entrepreneurs in the Penatar Sewu Village area. The tools applied to Partners are in the form of a Special Oven for smoking fish using LPG. The advantage of this oven compared to traditional smoking is that the smoked fish will cook evenly. Fumigation is one way for preservation by utilizing a heat source that comes from the smoke from burning wood or other materials.

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