Food processing industry and ergonomics handicraft creation from shellfish

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Abstract. Ujung Pangkah Sub-district, Gresik has great potential of seafood in the form of
shellfish but low selling price. This is because the shellfish are sold without being processed
first but sold in the form of fresh shells. The problem can be solved when there are methods to
process shellfishes into various types of foods and handicrafts with higher production capacity
and socialization to the community about shell processing correctly and adequately. Therefore,
efforts are made to increase the industry and household scale in food processing and handicraft
production from shellfishes in Ujung Pangkah Sub-district. These efforts are carried out in the
form of various training and food processing assistance into various foods (such as shell
nuggets, and crispy shells), handicraft making (table clock, photo frame, pencil box), financial
management, packaging techniques, and marketing management to improve their welfare. This
innovation is shell processing into a variety of products that combine several functions of food
processing, but safe, comfortable, and healthy for the user and useful for its products. Through
this program is expected many entrepreneurs who use the potential shells.

Keyword: shellfish processing, food from shellfish, handicraft from shellfish

1. Introduction

1.1. The Potential of Shellfish

Most of the coastal areas possess potential fish and shells [1]. Most of the fishermen in collecting fish
and shell not in good manner, it will increase musculoskeletal disorder [2]–[4]. Aspects of ergonomics
are crucial to note not only in industry but also by coastal communities who work as fishermen. This
prevents the possibility of back injury and musculoskeletal disorders [5]. Subdistrict Ujung Pangkah is
a subdistrict in Gresik regency that has great potential in developing shrimp catching business. In
Ujung Pangkah, there is much fish caught by fishermen, including shellfish, shrimp, mangrove crab,
and grouper fish, snapper fish. Caught Shellfish has not been developed by fisherman whereas its
natural potential is enough to support their life. Generally fisherman only sells shellfish that are small,
so it has more economic values [6].

Following the government program that is the empowerment of rural communities and populist
economy, it is necessary to explore all potential that exists in the countryside, such as excavation
and utilization of natural resources and human resources [7] while academics help everything related to the
needs and can benefit the rural communities. In Ujung Pangkah subdistrict, there are 70% of the
productive age population work as a fisherman, fish farmers, and farmers [8]. Ujung Pangkah
community mostly get an education through boarding school. Knowledge of shellfish processing is obtained from field experience. People in Ujung Pangkah sub-district still need further guidance to increase knowledge, ability, and transfer of shellfish processing technology.

Shellfish caught by a fisherman in the Ujung Pangkah sub-district is quite big, but it is underutilized. In fact, shellfish can be a source of food. Still available fishing grounds that have not been utilized by the community, such as channels of water entry or water irrigation in the area of aquaculture and estuaries. Shelter from the processing of shellfish is not a problem, because the results of this processing can be marketed in Ujung Pangkah or in markets and seafood restaurants.

The shellfish processing industry can be conducted by anyone who is no exception to a certain level of education [9]. Considering that most of the community members are able to do shell processing and cooperate with various parties and related institutions, besides optimizing from the utilization of shellfish from Ujung Pangkah community that is very high, it should also get attention to be optimized its existence as the main ingredient of shell fogging. In addition, shell waste can also be used for handicraft products.

New trends in food processing today is including new developments in techniques and methodologies for the manufacture, preservation, and monitoring of food [10]. Consumers’ desire is oriented towards new foods that are comfortable and easily conserved. Consumers are also more aware of the need for safer products, increasing the demand for fresh food or minimally processed preservatives of synthetic chemicals. Another important trend is the consumer demand for healthy food. Processed shellfish by household-scale industries without preservatives and healthy to eat, other than that shellfish obtained fresh from the environment itself. Shellfish also contain nutrients that are good for health. Shellfish can be processed into various variations of food such as burgers, sticks, clams crispy, crackers, and others. This food is consistent with current trends with different ingredients that simultaneously empower coastal community economies.

Management of production and service activities is very important to emphasize due to the importance of competition in the business environment, maintaining market share, and customer satisfaction aspects. The active industry in the food sector is faced with great risks [11]. Therefore, marketing training should be undertaken to reduce undesirable risks for growth and survival.

Shellfish are mostly found in the tropics area, especially around the coastal area of the Gresik Regency. Since ancient clams, there are almost on the beaches in Gresik regency. All this time the utilization of shellfish waste is limited to complementary toys of children. So the price of the shell becomes very cheap, due to not yet optimal society in using shellfish.

Ujung Pangkah sub-district, Gresik regency has big potential in producing shellfish. During this time, shellfish produced by fishing communities are still sold in raw materials and not yet processed into finished products. Shells have many benefits such as can be made into handicrafts such as Box Tissue, Photo Frame, Wall Clock, Pencil Place, etc. It can improve the welfare of the local community [8].

1.2. The Benefit of Processing Shellfish
Shellfish could be processed into various foods (shell crackers, shell nuggets, shell burgers, shell sticks, and crispy shells) and shell handicraft products (table clock, photo frame, pencil case). Utilization of these shells can improve welfare and foster the creativity of the community, especially in coastal areas. Various processed foods from shellfish could also be utilized to attract consumers of coastal tourism. The shellfish itself has a high protein content, low calorie, low fat/cholesterol with a lower proportion of saturated fat, vitamin B12, and minerals such as copper, iron, and zinc [12].

1.3. Target and Outcomes
The target is to improve the welfare of the community that has been analyzed previously. The outcomes of this community service are the publication of food processing and handicraft from shellfish, method of processing shellfish to variety food (shellfish crackers, shell sticks, crispy shells, and shellfish burger), and the making of handicraft products from shellfish (Table 1).
Table 1. Predicted results of the training activities

| Before the community partnership program | After the community partnership program |
|-----------------------------------------|------------------------------------------|
| 1. Yields of shellfish were purchased by middlemen at relatively low prices | 1. The yield of shellfish is processed independently, resulting in high-value products |
| 2. The community had not been able to process the shellfish into various processed based on the shell. | 2. The community can process the shellfish into various processed products such as (shell crackers, shell nuggets, shell burgers, shell sticks, and crispy shellfish) |
| 3. The community did not know how to process shellfish into handicraft products | 3. The community can process shellfish into handicraft product, so resulting in sales at high prices |
| 4. The majority of the community only work as cultivators of shellfish, income only from shellfish cultivation | 4. The community has additional work by cultivating high-income shellfish |

2. Method
The implementation method of training program activities of the household industry for food and handicraft from the shell in Ujung Pangkah sub-district, Gresik Regency, East Java Province described in the following diagram in the form of solutions offered to overcome the existing problems (Figure 1).

![Diagram](image-url)
3. Results and Discussion

Activities and training (Figure 2) that have been implemented are as follows:

1) Training of food processing from shellfish, to support this training it has been given shell processing tools. This training is taught how to make a burger, sticks, crackers, and crispy made from shell.

2) Training of making handicrafts. Participants know how to make handicraft products from shellfish become handicrafts as well as can develop their creativity.

3) Financial management training, participants know how to manage financially of shell business and can do simple financial bookkeeping.

4) Training of basic packaging techniques. Participants know how to create attractive packaging as well as know-how to package the processed products.

5) Training of marketing techniques. Participants know and understand how to sell their products.

![Figure 2. Training and Empowering People Program](image)

4. Conclusions

It's have been conducted some of the training for food processing for various shell-based food (shell crackers, shell nuggets, shell burgers, shell sticks, and crispy shellfish). The waste from shellfish has been processed into various handicraft products such as table clock, photo frames, and pencil cases. The training has successfully improved the knowledge of participants in terms of knowledge about processing shellfish into various culinary and various handicrafts, and it has been improved skills in processing shellfish into various foods and handicrafts along with entrepreneurial activities. As short, This program can assist the partners in improving economic welfare independently and business development in coastal areas.

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