Increasing The Quality and Quantity of Marine Processed Production in Fisherman Villages

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***Abstract*—The processed sea is one of the livelihood commodities in the fishing village of Surabaya. The production process includes cleaning, drying, cooking, and packaging activities. One of the problems faced is in the drying process. Dry on the highway makes the product unhygienic. Horizontal drying areas have a limited area for drying. The solution given to this problem is a multifunctional vertical drying area. Vertical drying racks can increase the quantity of drying up to 5 times. Product quality can also be improved because there is no drying on the edge of the highway which causes the product to be less hygienic. The multifunction of the drying area is obtained from 3 main functions: a drying place, a storage area, and an oven. The use of metal material aims to make the drying place have a longer life than bamboo. The use of metal angled holes is intended so that the distance between rack levels can be adjusted to the needs and can be added or reduced. The increase in the quantity and quality of production in the drying process is expected to increase the profits of the business of processed marine products in the Surabaya fishing village.**

***Keywords*—Drying, Multifunctional, Place, Product, Vertical.**

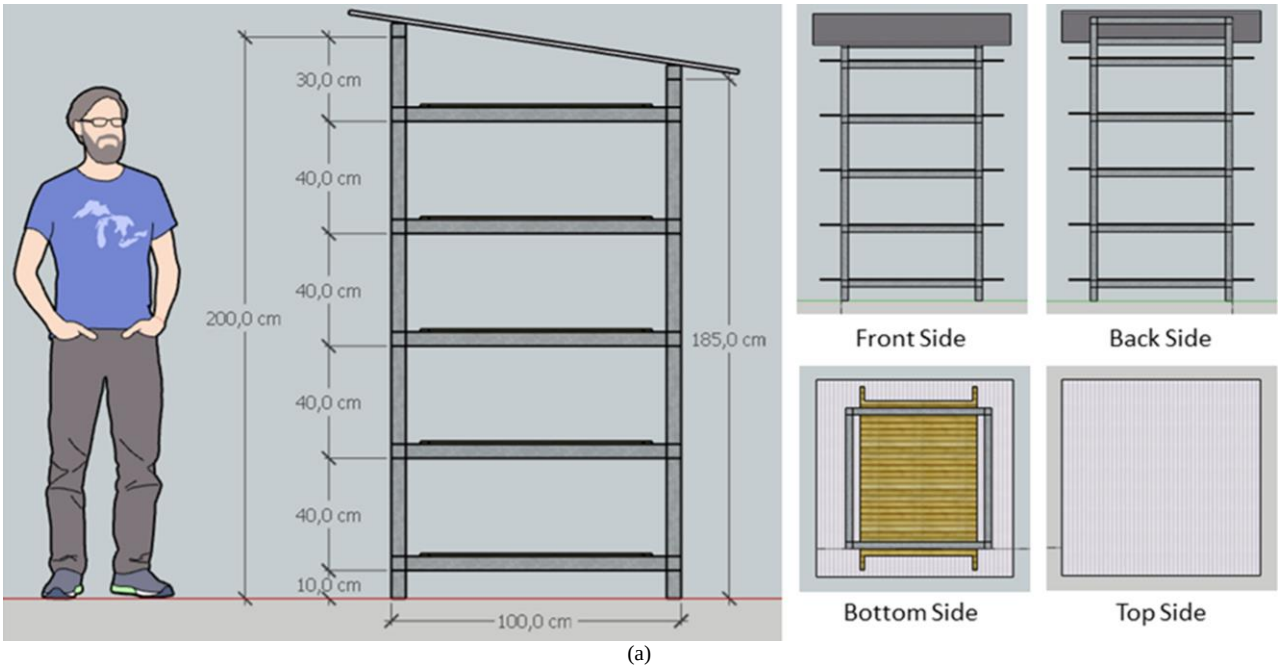
I. INTRODUCTION

INNOVATION-based economic transformation in Indonesia is driven through 5 main focus areas, namely the Green Economy, Blue Economy, Digital Economy, Tourism, and Health Independence, according to the direction of President Joko Widodo [1]. This must be maximized to be able to carry out economic recovery after the COVID-19 pandemic which is still happening today. One sector that plays an important role in the recovery strategy is the tourism sector and MSEs [2]. Various regions in Indonesia, both at the provincial and city, and district scales are making efforts to recover the economy after the pandemic, including East Java, this is indicated by the Economic Development Index which exceeded the national achievement in 2020 [3] and became the second largest economic contributor after DKI Jakarta in 2021. [4] with a focus on recovery, one of which is industry and tourism [5]. Of the various cities and regencies in East Java, the City of Surabaya ranks first in the highest economy in East Java until the last report issued by the Central Statistics Agency (BPS) in 2020 [6].

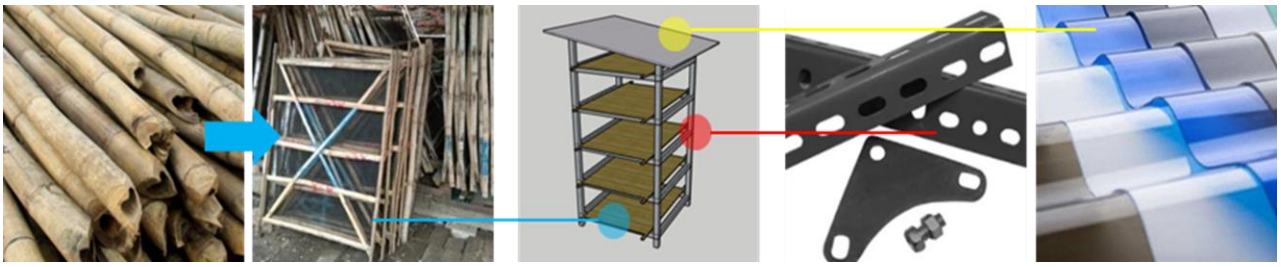
Based on the data above, this service activity is focused on economic activities in the MSE sector that support the tourism sector, especially in blue economy tourism related to maritime, namely UMK "Aisyah" Sea Processed Products. This UMK was chosen because it is engaged in the seafood processing business, which is located on Kenjeran Lama Beach for sales and Kenjeran Fisherman's Village for production sites (Figure 1) related to the blue economy and is a typical Surabaya gift that can be obtained in tourist areas, namely Kenjeran Beach, Surabaya related to the tourism sector.

Figure 1. Conditions of drying currently carried out.

One of the problems that partners have is in the production sector, especially in the drying process. Partners who live in fishing villages have limited land for drying so it is not much and drying on the roadside can affect the quality because they are exposed to dust and vehicle fumes.



(a)



(b)

Figure 2. (a) Design of a multifunctional vertical drying place; (b) Selection of materials used.

II. METHOD

The method used to make a multifunctional vertical drying area consists of 4 stages, namely Planning, Implementation and Evaluation. The planning stage carried out includes measuring the dimensions of the land, the dimensions of the drying place for drying, determining the material, and making designs. The implementation stage includes purchasing tools and materials, making frames, making roofs, laying in the drying area, and carrying out the drying process. The evaluation stage carried out includes the evaluation of processed marine products that are dried in a vertical drying area compared to a bamboo drying area.

III. RESULT AND DISCUSSION

A. Design

The design was made in 2 stages, namely the first stage in the form of hand sketches between lecturers and partners, and the second stage in the form of digital images made by lecturers and students (Figure 2a). The design software used in Sketchup 2019. The design size of 100 × 100 cm is made following the tempeh size with dimensions of 80 × 120 cm. The roof height of 200 cm and the top shelf of 160 cm allow mothers to dry on the highest shelf easily. The drying area consists of 5 levels with a distance of 40 cm to make it easier when placing and taking tempeh.

B. Material Selection

The frame of the drying place uses rust-resistant metal material so that it can be used for the long term (Figure 2b). The metal material used has a hollow L-shaped elbow with a bolt nut connection system so that people can add, reduce and adjust the height of the rack according to their needs. The roof covering uses a transparent fiber material to pass the sun's rays. The roof is made not permanent/can be taken and installed according to hot and rainy conditions.

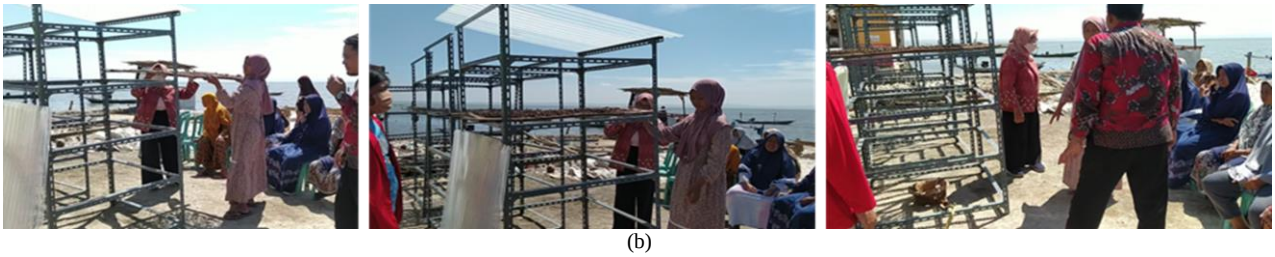
C. Process

Making 2 shelves with 3 people can be done in 1 day. So the total time needed to make 4 shelves is 2 days. Making is not only done by lecturers and students but also assisted by partners and the surrounding community (Figure 3a). The manufacturing process consists of several stages, namely measuring, cutting, assembling the frame and roof, and strengthening the structure.

D. Multifunction Vertical Drying Place

This vertical drying place has 3 functions, namely for drying, storing, and baking. The left image in Figure 3b shows the drying activities carried out by partners from the bottom floor/level 1 to the top shelf/level 5. The middle image shows the activity of storing clothes for the afternoon to evening. The contents of the product are in tempeh when storing more than when drying. The right image shows the

(a)



(b)

Figure 3. (a) The process of involving the community; (b) Functions of vertical drying place.

activity of the oven when you want to dry faster. If the oven is done, then only the top 4 shelves or the bottom shelf/1st level are functioning so that they can be used as stoves and iron plates for heating.

E. Drying Simulation

This multifunctional vertical drying rack can be used in 4 different conditions (Figure 4a). The first condition is during the dry season, the second during the dry season using the oven, the third during the rainy season, and the fourth during the rainy season using the oven. The first condition is an ideal condition by utilizing the sun's heat and wind to dry it to dry.

The second condition is a condition when there are many orders so that they have to produce faster or when there are many fishermen catches so they need to dry more and faster. The second condition utilizes 3 elements to dry, namely the heat of the sun, wind, and heat from the oven smoke.

The third condition is a condition when it rains. With this vertical drying area, people can stay dry and process marine products when it rains by installing a cover for both the roof and the sides. The drying process is carried out using the wind. The community can also do the oven in the rainy season in the fourth condition. This can be done if the drying process is less effective in the third condition or requires more and faster production processes during the rainy season.

F. Increasing the Quantity of Drying Results

Figure 1 shows the drying process currently carried out by the community with a horizontal system, either in the alley using bamboo or on the roadside which can dry 1-2 kg of wet seafood per tempeh. The vertical drying area has 5 levels of shelves so that with the same land, people can dry up to 5 times more (Figure 4b).

G. Increasing the Quality of Drying Results

The current drying done on the bamboo above the alley has drawbacks when it occurs rain, the process of moving into the house requires hard work and a long process, thus making the product wet/not dry quickly which can affect the quality of the product. Drying on the highway can also affect the quality

(a)

(b)

Figure 4. (a) Simulation conditions of drying; (b) Before and after comparison regarding the quantity of drying.

of the product because it is exposed to motor vehicle fumes and dust. Vertical drying places can minimize these 2 problems and can improve the quality of the products produced from the drying process.

IV. CONCLUSION

This service activity is included in 2 of the 5 main focus areas of the government, namely Tourism and Blue Economy/Maritime. Partners are UMK actors who process fisherman's catch and are processed into marine processed products in the maritime sector. The product produced by the partner is also one of the typical Surabaya souvenirs and is sold at the Taman Hiburan Pantai (THP) Kenjeran Lama, which is one of the tourist attractions in Surabaya. Therefore, activities that have an impact on these partners can increase

their contribution to tourism and maritime affairs in Surabaya.

The multifunctional vertical drying area made is one form of Simple Technology/Appropriate Technology (TTG) because it can be made by the community themselves and can be operated easily by partners. Making designs pay attention to modules that can make it easier for people to make arrangements on the land or make additions to make the next shelves. The material used also pays attention to the long-term economic value to minimize replacement costs, and pays attention to the flexibility factor so that people can easily adjust the size and position, and add and subtract according to the desired conditions.

Increasing the quantity and quality of processed marine products is a solution given to problems in the drying process. There are 5 production processes carried out by partners, namely the process of collecting fisherman catches, the sorting process, the washing process, the drying process, the cooking/processing process, and the accommodating process. The drying process is the most important process because during the dry season there is heat to dry the product but the catches of fishermen are small. During the rainy season, the catches of fishermen are abundant but the community has difficulty drying them, resulting in people having to sell wet at a low price.

So this activity can indirectly increase income for fishermen. If the community can dry it when it rains, then the community will still benefit because they can sell the dry product either during the rainy season or stored and sold during the dry season when it is difficult to get products.

ACKNOWLEDGMENT

The Service Team consisting of Febby Rahmatullah Masruchin, Ratnaningsih Sri Yustini, and Naufal Abdillah expresses gratitude to Allah SWT and thanks to the Direktorat Riset Teknologi dan Pengabdian kepada Masyarakat (DRTPM) 2022 for the funding provided, LPPM Universitas 17 Agustus 1945 Surabaya which has facilitated and assisted the administration during the implementation activities, Heads and Lecturers from the Architecture, Management and Informatics Engineering Study Program for the facilities and infrastructure provided, 2 students who helped implement the conversion of Merdeka Belajar Kampus Merdeka (MBKM) activity, Mrs. Aisyah Fujiati Mahfiro as a UMK partner Aisyah and the fishing village community in Sukolilo Lor Surabaya Village who succeeded in carrying out the activities while at partner locations (Figure 5).

Figure 5. Implementation of community service activities in Fisherman Village.

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