

PRODUCTIVITY IMPROVEMENT OF STARCH CRACKERS IN KEDUNGKANDANG DISTRICT AS HOME INDUSTRIAL SCALE

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Abstract

The products produced by Home Industry (IRT) are increasing significantly, one of which is Mr Shodiq's IRT located in Kedungkandang Village, Malang City, East Java. The IRT gathers homemakers to make a product, namely starch crackers with the main ingredients from tapioca flour. The productivity of starch crackers has not increased because the Malang area's weather conditions often rain or are cloudy, even exacerbated by pandemic conditions. Drying of starch crackers still uses the direct drying method under the hot sun and knowledge about the importance of the hygienic process of making starch crackers and product packaging. The methods implemented in this service are socialization, counselling, training, and assistance for IRT. The indicator of the success of IRT community service activities is the formation of 6 cadres of IRT members who can practice the drying process with an oven. The results of drying using an oven dryer require a shorter time of 1 hour with a moisture content of about 8% compared to drying with sunlight which requires about 96 hours. Overcast conditions are around 336-360 hours with a moisture content of 10% for full sun conditions and above 12% for cloudy or rainy conditions.

Keywords: Starch Crackers, Home Industry, Oven, Productivity.

INTRODUCTION

The Covid-19 pandemic has had many impacts on Indonesia. The Covid-19 virus has the characteristics of very fast transmission through the airborne spread, which can result in a reduction in community activities or mobility outside the home through the PPKM program by the government (KEMENKES, 2021). This condition causes economic problems experienced by the community. So that the potential of the Village needs to be explored and analyzed to increase economic opportunities that make the Village independent based on a creative economy (Hatneny, Mahardani, & Saraswati, 2019) (Anggraheni, et al., 2020). One technique for improving the economy, one example is the manufacture of small industries in households for managing agricultural products owned by villages by making attractive packaging so that these products can attract the attention of consumers and product marketing is better and wider (Sholihah, Normaladewi, & Laksono, 2019) (Wirateruna, et al., 2022).

Industry is a number of companies that produce and sell a number of products using the same technology (Fatria, Jahrizal, & Pailis, 2017). The home and small-scale industries are often believed to have more flexibility than business industries (Joesyiana, 2017) (Anam, Arifin, Widiastuti, & Arifin, 2020). Kedungkandang Village, located in Kedungkandang

District, Malang City, has a growing micro-enterprise in the home industry, namely the manufacture of starch crackers, where this Village only absorbs 3 to 6 workers. IRT "Nisa" is made as a PKM partner. The micro-business developing in this Village is the manufacture of starch crackers. Therefore its existence needs to be maintained and developed to have a better position to participate in building the economy of the people of Malang City in general and the Kedungkandang community in general. In particular, their knowledge about increasing the production of starch crackers, increasing the profits of starch cracker production and understanding hygienic cracker production is not well understood by residents.

The proposed PKM activity plan that the implementing team will carry out is directed to provide alternative solutions to some of the problems faced by Kanji cracker IRT in Kedungkandang Village, Malang City, and so that this IRT can develop and be able to compete with other large snack food industries.

IMPLEMENTATION METHOD

To find solutions to problems faced by partners, the approach method is carried out in accordance with each problem, both related to product problems and management problems. Community service activities (PKM) consist of several stages: identification of partners, needs analysis, outreach activities to the community, training, mentoring and evaluation.

Identification of stakeholders

Identifying stakeholders or partners is done to know the partners' profiles and existing problems. Identification activities are carried out by collecting data at the village level and community leaders about MSME partners. Methods of data collection using interviews and data collection directly. The identification activity ended with a direct discussion with the partners.

Data analysis

The data collection results are then analyzed so that the formulation of partner problems can be obtained from these problems formulated solutions that are easy to implement directly by partners to achieve program sustainability.

Socialization

It is crucial to carry out socialization activities so that the perceptions between partners, communities and servants are aligned so that the objectives of the PKM program can be adequately achieved. Therefore, the outreach activities emphasized sustainability programs.

Activities of training and counselling on productivity innovation of kanji crackers

Making starch crackers begins with the preparation of materials for the manufacture of hygienic crackers and on the technical aspects of product packaging, with high product selling price and efficiency of production time can be achieved. Furthermore, training activities were carried out on the production of starch crackers with the aid of the cracker drying process so that they could still produce crackers even in rainy weather conditions. The training was held at IRT Mr Shodiq, Kedungkandang Village, Malang City.

Accompaniment

MSME Partner members are allowed to implement the training and counselling materials that have been obtained. In addition, during the process of implementing the production of starch crackers, assistance is provided with both online and offline.

Evaluation

Evaluation is carried out to determine whether the target of the PKM program has been achieved. Interview sessions were conducted with seven partner members to determine the understanding and impact of the use of dryers in the production process of starch crackers.

RESULTS AND DISCUSSION

The results of the partner analysis show that the constraints experienced by Mr Shodiq's Home Industry partner in making starch crackers or tapioca flour are weather constraints which often experience cloudy weather or even rain with a high frequency, especially in the Kedungkandang village area, Malang city. This weather condition causes inhibition of the starch cracker production process, especially the part of the cracker drying process. Suppose they are forced to dry in the sun at room temperature. In that case, it will take a very long time, even if the drying results are not optimal or the wet dough for crackers will rot quickly, so the erratic weather conditions affect the decline in the productivity of starch crackers.

In addition to productivity issues, there is a lack of awareness among partner communities about hygienic product processes. In addition, the packaging of starch cracker products is less attractive. So that this will have an impact on the quality of starch crackers. Service activities for Mr Shodiq's IRT partners began with outreach activities to equalize the frequency between partners and the team to solve partner problems.

Extension activities for making hygienic and quality starch crackers

Assistance and counselling for Home Industry players must be implemented so that the production process and product management can develop consistently towards better results to increase competitiveness through applying science and technology in the community (Vikasari, Handayani, & Prasadi, 2020). IRT actors for the community are instrumental in increasing income and welfare (Triwuri, Dwityaningsih, Prasadi, & Sari, 2019). Counselling activities on how to make the process of making starch crackers from the beginning to the end are hygienic and of high quality. During the outreach activities, seven partner members attended. The material presented is about how to keep the product hygienic. Even during the manufacturing process, the quality of the product must be appropriately maintained. In addition, product packaging needs to be considered in the production process of starch crackers, which is conveyed in outreach activities. Product packaging is very influential in increasing the product's value so that the profits obtained are higher. Good packaging can also expand the sales market for starch crackers made from tapioca flour.

Drying Process Of Kanji Krupuk

The drying process of starch crackers made from tapioca flour is one of the most essential processes in determining the quality of starch crackers in terms of taste, texture and appearance.



Figure 1. Proposed dryer machine

To help the drying process fast but still maintain product quality, a drying oven with a simple design and still paying attention to heat distribution so that it is evenly distributed is shown in Figure 1. The simple design and easy use of the Oven are the right choices for the IRT industry to procure additional ovens independently can be carried out so that the sustainability of the service program can be achieved.

During the training and mentoring, the partners directly practice making essential ingredients, drying, frying to packaging. For the drying process, a comparison is made of the conventional drying process with three conditions, namely full sun conditions, cloudy and rainy conditions, and drying using a drying machine or gas-fired Oven.



Figure 2. Preparation process

There are several checking criteria during the drying process until the drying results are drying time, product quality and moisture content of starch crackers made from tapioca flour after the drying process. Figure 2 shows that one of the IRT partner members, Mr Shodiq, prepares starch crackers in wet conditions that are ready to be put in the Oven for drying. Due to limited space conditions, oven drying and packaging are carried out simultaneously. Table 1

shows the results of comparing the starch cracker drying process with various conditions and checking criteria.

Conventional drying in full sun conditions takes four days or 96 hours to obtain good quality crackers with a moisture content of about $\pm 10\%$, whereas drying using an oven shows better performance, namely the drying process takes about 1 hour with the moisture content obtained. Below, about 8%. The maximum water content in raw crackers based on SNI 01-2713-1999 is about 12% (Anonim, 1999). So that the drying results based on the moisture content for both drying methods with full sun conditions and drying with ovens are following SNI standards.

Table 1. Comparison of Drying Process Results with Various Methods

| No | Criteria | Sun Drying | Sun Drying (Cloudy Condition) | Room Temperature Drying (Rainy Conditions) | proposed dryer machine (Oven) |
|----|---------------------|-------------|-------------------------------|--|-------------------------------|
| 1. | Drying Time (Hours) | 96 (4 Days) | 336 (14 Days) | 360 (15 Days) | 1 |
| 2. | Product Quality | Good | Not Good | Not Good | Good |
| 3. | Water Content (%) | 10% | 14% | 16% | 8% |

On the other hand, the conventional drying method in cloudy and rainy conditions showed poor results when compared to the conventional method with full sun conditions and the oven drying method. Overcast and rainy conditions require a long drying process, about 14 days (336 hours) and 15 days (260 hours, respectively), with water content above the minimum SNI limit of 14% for cloudy conditions and 16% for rainy conditions. The water content for these conditions is outside the SNI standard. High water content causes the quality of crackers to be not good and cannot last long.

CONCLUSION

Community service activities that have been carried out to increase the productivity of Mr Shodiq's IRT starch cracker products are socialization activities, material counselling about the process of making hygienic products, training on the drying process with ovens and mentoring.

The indicator of the success of IRT community service activities is the formation of 6 cadres of IRT members who can practice the drying process with an oven. The results of drying using an oven require a shorter time of 1 hour with a moisture content of about 8%, when compared to drying with sunlight which takes time about 96 hours, overcast conditions, 336-360 hours with a moisture content of 10% for full sun conditions, and above 12% for cloudy or rainy conditions.

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