

Increasing the Economic Value of Waste Cooking Oil into Creative Products as an Effort for Zero Waste Management in the UMKM Industry on the Jepara Coast

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Abstract

Cooking oil is one of the important raw materials for UMKM (stands for Micro, Small, and Medium Enterprises (MSME) in Bahasa Indonesia), especially UMKM engaged in the food and beverage sector. Used cooking oil has a negative impact on both the body and the environment. Used cooking oil that is disposed of carelessly can cause various health problems. Currently, waste cooking oil/used cooking oil used by partners in running their businesses is only stored and waiting to be collected by the central government. Meanwhile, during the rainy season, the frequency of crossings is very limited so that there can be a buildup of used cooking oil at the partner's location. Meanwhile, this waste cooking oil/used cooking oil can be further utilized into various creative products with high selling value. Processing used cooking oil into creative products is expected to be a source of additional income for Partners and can also be one of the efforts to support zero waste management in the UMKM industry. In this community service activity, various diversifications of waste cooking oil processing into various products will be carried out. Partners will also be provided with assistance in making promotional media both offline and online. At the end of this activity, digital marketing training will also be carried out to assist Partners in marketing the products produced.

Keywords: *Used cooking oil; candles; aromatherapy; waste*



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A. INTRODUCTION

Cooking oil is one of the important raw materials for UMKM, especially UMKM engaged in the food and beverage sector. Cooking oil is used to fry various foods, such as fried foods, meatballs, and tempeh. According to data from the Badan Pusat Statistik (BPS) of Jepara Regency in 2022, the population of Karimunjawa is 31,155 people. Assuming an average consumption of cooking oil per capita per day of 200 grams, the amount of cooking oil used in Karimunjawa per day is 6,231 liters. In a month, the amount of cooking oil used in Karimunjawa is 187,936 liters (Saputri et al., 2021). Cooking oil that has been used several times can become

used cooking oil or in other words used cooking oil is cooking oil that is no longer suitable for frying food. This is because used cooking oil has undergone physical and chemical changes that can be harmful to health. Characteristics of used cooking oil are (1) The color changes to dark or blackish (2) The smell is rancid (3) The texture becomes thick (4) Lumps or sediment appear (5) It tastes bitter when tried. Used cooking oil has a bad impact on both the body and the environment. Used cooking oil that is disposed of carelessly can cause various health problems, including (1) Increasing the risk of heart disease. Used cooking oil contains high levels of cholesterol. Continuous consumption of used cooking oil can increase cholesterol levels in the blood, thereby increasing the risk of heart disease (Megawati & Muhartono, 2019). (2) Increasing the risk of cancer. Used cooking oil that is heated repeatedly will produce carcinogenic compounds, namely compounds that can cause cancer (Aisyah et al., 2015). (3) Causes digestive disorders. Used cooking oil that is disposed of into drains can contaminate drinking water. This can cause digestive disorders, such as diarrhea and nausea (Sumekar et al., 2016). (4) Blocks drains. Used cooking oil that is disposed of into drains will form a layer of fat that can block drains. This can cause flooding and sanitation problems. (5) Polluting the soil and water. Used cooking oil that is dumped on the ground can seep into the soil and pollute groundwater. This can damage the aquatic ecosystem and disrupt human health (Garnida et al., 2022).

Currently, waste cooking oil/used cooking oil used by partners in running their businesses is only stored and waiting to be collected by the central government. Meanwhile, during the rainy season, the frequency of crossings is very limited so that there can be a buildup of used cooking oil at the partner's location. Meanwhile, this waste cooking oil/used cooking oil can be further utilized into various creative products with high sales value. Processing used cooking oil into creative products is expected to be a source of additional income for Partners and can also be one of the efforts to support zero waste management in the UMKM industry.

Waste cooking oil/used cooking oil can be utilized into various products. These products include (1) as Lamp Fuel (2) Raw Material for Soap (3) Raw Material for Candles (Busalim, 2023; Kenarni, 2022; Bachtiar et al., 2022; Nohe et al., 2020; Permadi et al., 2022; Wardani, 2021) (4) Laundry soap (Kusumaningtyas et al., 2022; Wulandari & Safaah, 2020; Yuniati et al., 2022) (5) Additional fertilizer for plants (Silaban, 2023) (6) Biodiesel fuel. In this community service activity, various diversifications of cooking oil waste processing into various products will be carried out. Partners will also be given assistance in creating promotional media both offline and online. At the end of this activity, digital marketing training will also be carried out to help Partners market the products they produce.

B. METHOD

This Community Service Activity will be carried out by carrying out various activities in diversifying products from cooking oil waste. Some activities related to the formation of this community service are (1) Training in making laundry soap from cooking oil waste (2) Training in making aromatherapy candles from cooking oil waste (3) Training in making fertilizer from cooking oil waste (4) Training in making promotional media (5) Digital marketing training for UMKM actors.

C. RESULT AND DISCUSSION

This Community Service Activity was carried out in August 2024, the activity was attended by UMKM owners in the food business sector. The process of this activity began with the delivery of material. The material presented in this activity included the dangers of using used cooking oil more than 3 times because it can cause heart disease or cancer. In addition, if used cooking oil is disposed of through water channels, it will cause environmental pollution in the surrounding area, so that to utilize the remaining used cooking oil, an alternative is given to process it into something more useful. One of them is by making candles. After the delivery of the material and discussion, it was continued with direct practice of making candles. UMKM owners in the food business sector are the target participants, because in their business they interact directly with the use of cooking oil so they need to be given an understanding so that they no longer use used cooking oil more than 3 times and do not dispose of it carelessly.



Figure 1. Aromatherapy candles resulting from training.

Candle making during practice is done directly by the participants, so that later when they will practice at home they already understand how to make candles (the candle making process is explained in the implementation method). If the dough is cold and all the ingredients are mixed evenly. Then the dough is ready to be put into the mold. In the process of making candles from used cooking oil, there are several things that must be done, namely always wearing gloves, not using aluminum tools, if you want to clean the equipment, wait for the oil to thicken into wax before cleaning it, this is to avoid direct contact with the skin of the hands. After the wax dough is put into the mold, wait until it thickens and is completely solid. The waiting period for the candle to be used is 2-3 days.



Figure 2. Aromatherapy candles from waste cooking oil.

After this activity is completed, it is hoped that participants who have followed the process from start to finish can pass on their knowledge to mothers in the surrounding environment so that the used cooking oil they use no longer causes pollution and causes dangerous diseases due to the wrong use of used cooking oil. The more people understand the dangers of environmental damage, the more they can help reduce used cooking oil waste that is disposed of carelessly, even the waste can still be processed into useful products. The obstacles faced when holding this activity were the difficulty of getting permission to gather participants in large numbers due to the current pandemic conditions, the time allowed was only about 2 hours so that when the participants practiced it was felt to be less than optimal. However, to overcome this problem, recipe notes and video tutorials have been made for making candles, so that participants can study again. The video tutorial for making candles can be accessed via the following link: <https://www.youtube.com/watch?v=YiGVOdr9gnw>

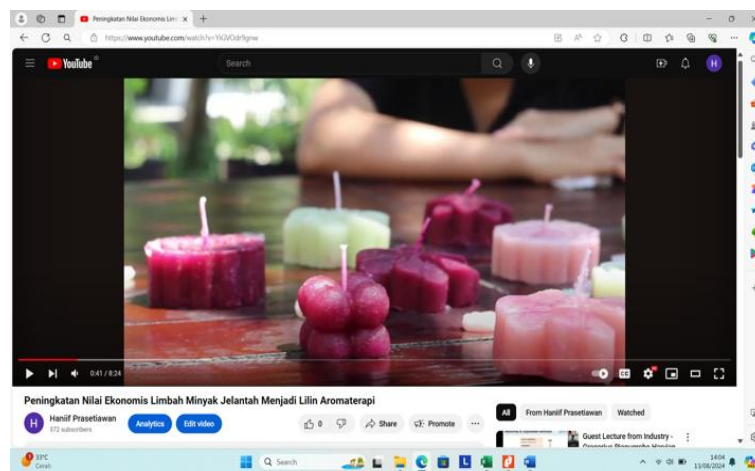


Figure 3. Screenshot of a soap making tutorial on Youtube.

Cooking oil is one form of vegetable oil, in the form of glyceride compounds from various fatty acids contained in the glyceride itself. In food technology, oil and fat play an important role because oil and fat have a high boiling point (around 200°C) so they can be used to fry food so that the fried ingredients will lose most of the water they contain and become dry. Oil and fat also provide a specific savory taste of oil that is different from the savory protein and gives a specific aroma.

Every household will usually produce waste oil from the frying process, oil that has been used repeatedly by people in Indonesia is often referred to as used cooking oil (mijel). Most cooking oil users often immediately throw mijel into wastewater such as drains or soil. Continuous conditions like this will cause environmental pollution and have the potential to damage the lives of several communities of living things in rivers, the final flow of gutters and damage the components of soil content. For this reason, proper handling is needed so that this used cooking oil waste can be useful and does not cause harm from the aspect of human health and the environment. The utilization of used cooking oil can be done through a refining process so that it can be reused as a raw material for oil-based products such as candles.

As a guideline for UMKM entrepreneurs, authors also created a booklet on making candles from used cooking oil waste. This booklet is expected to be reproduced and distributed to local residents so that they can find out the great benefits of used cooking oil waste. So that there is no more used cooking oil waste that becomes a source of environmental pollution.



Figure 4. Booklet for making candles from used cooking oil.

As an alternative logo, we give the product produced from used cooking oil waste a logo to make it more attractive. The logo of this used cooking oil candle can be seen in Figure 5.



Figure 5. Logo of used cooking oil candle.

D. CONCLUSION

From this community service activity, it can be concluded that making candles from used cooking oil can reduce household waste and participants from UMKM who attended the training seemed interested and understood the explanation given. Based on the results of the discussion of the training that had been carried out, it can be concluded that (1) Public attention to the extension material presented was quite high. This can be seen from the many questions asked by participants who attended the extension. The questions asked were not only about how to make soap from used cooking oil but also about how to apply wax in daily activities. (2) MSME entrepreneurs were able to follow well and participate in practicing making candles from used cooking oil, enthusiasm and curiosity about the mechanism of soap were very high. Through this activity, it is hoped that participants and the community can make candles from used cooking oil themselves at home with easily obtained ingredients and a simple process. The success rate of this practice of making candles from used cooking oil is 95%.

REFERENCES

- A. W. Saputri, H. Fajar, H. S. Gumilar, Moch. Wahyu Pratama, Y. Syavitri, Z. Ilma, and J. H. G. Purwasih, J. Abdimasa Pengabdi. Masy. **4**, 73 (2021)
- M. Megawati and Muhartono, Pengaruhnya Terhadap Kesehat. Major. | **8**, 259 (2019)
- S. Aisyah, H. Budiman, D. F. BR. G, D. Aliza, M. N. Salim, U. Balqis, and T. Armansyah, J. Med. Vet. **9**, 26 (2015)
- A. Sumekar, S. U. Chasanah, and C. L. P. Dewi, J. Kesehat. Masy. **1**, 810 (2016)
- A. Garnida, A. A. Rahmah, I. P. Sari, and N. N. Muksin, J. Pengabdi. Masy. **7**, 7 (2022)
- F. Busalim, J. JANATA **3**, 30 (2023)
- Naina Rizki Kenarni, J. Bina Desa **4**, 343 (2022)
- M. Bachtiar, I. Irbah, D. F. Islamiah, F. R. Hafidz, M. Hairunnisa, M. A. Viratama, and S. Chelsabiela, J. Pus. Inov. Masy. **4**, 82 (2022)
- D. A. Nohe, M. Iqbal, D. S. Herlinda, A. Jasmine, and G. A. Arista, Lap. Pengabdi. Masy. LP3M **1** (2020)
- A. Permadi, M. Setyawan, N. Rahmawati, N. S. Sembiring, P. Magister, T. Kimia, F. T. Industri, U. A. Dahlan, P. T. Pangan, F. T. Industri, U. A. Dahlan, P. T. Kimia, F. T. Industri, and U. A. Dahlan, Semin. Nas. Penelit. Dan Pengabdi. Kpd. Masy. **4**, 182 (2022)
- and F. 2021 Wardani, Saptutyningsih, Proceeding UIN Sunan Gunung Djati Bndung **1**, 2 (2021)
- R. D. Kusumaningtyas, D. Widjanarko, W. H. Cahyati, R. Wulansarie, M. Maksiola, D. Meysanti, M. T. Salsabilla, D. D. Nugraha, M. D. Najuda, and M. F. Rachmadi, Abdimas **26**, 110 (2022)
- R. S. Mokodongan, S. N. Fauziah, and G. P. Sari, SELAPARANG J. Pengabdi. Masy. Berkemajuan **7**, 801 (2023)
- R. Wulandari and E. Safaah, ABDI LAKSANA J. Pengabdi. Kpd. Masy. **3**, 272 (2020)
- A. Yuniati, D. T. Roisnahadi, D. Irawan, S. Erggi Irawan, L. Andreanto, S. Dwi Cahya, C. Fepdiyani, and D. Tika Roisnahadi, Buguh J. Pengabdi. Kpd. Masy. **2**, 24 (2022)
- W. Silaban, J. Pengabdi. Masy. Sapangambe Manoktok Hitei **3**, 12 (2023)