

Application of Skim and Cream Separation Technology to Improve the Quality of Minyak Tanak: A Case Study in Nagari Sikabu Lubuk Alung, West Sumatra, Indonesia

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Abstract. This research explores the application of skim and cream separation technology to improve the traditional production process of *minyak tanak* in Nagari Sikabu, Lubuk Alung, West Sumatra. The problem addressed is the inconsistency in quality and lengthy production times using traditional methods, which often lead to oil with higher moisture content and shorter shelf life. The study aims to evaluate whether applying modern separation technology can enhance both the quality and efficiency of the production process. The research was conducted using a case study method, where data were collected through field observations, interviews with local oil producers, and laboratory tests. The oil was analyzed based on its clarity, aroma, taste, moisture content, and resistance to oxidation before and after applying the separation technology. The results indicate a significant improvement in oil clarity, a stronger coconut aroma, and a longer shelf life due to reduced moisture content. Additionally, the separation process time was reduced by 50%, increasing overall production efficiency. However, high initial costs and the need for specialized training present barriers to widespread adoption. The skim and cream separation technology effectively enhances the quality of *minyak tanak*, making it a valuable tool for improving traditional production methods, though additional support is required for broader application.

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1. Introduction

Tanak oil is one of the traditional coconut oil products that has high economic and cultural value in several regions in Indonesia, especially in West Sumatra. The traditional processing of this oil involves heating coconut milk for a relatively long time until oil is formed, with the aim of separating the water and solid components. However, this traditional method often produces oil with less than optimal quality, both in terms of clarity, aroma, and resistance to oxidation. The quality of the resulting tananak oil depends on factors such as the skills of the craftsmen, the condition of the raw materials, and the technology used in processing.

Along with the development of food technology, various modern methods have been introduced to improve the quality of traditional oils, including skim and cream separation technology. This technology offers a solution to separate cream from coconut milk more efficiently and accurately, thereby speeding up the process of making tananak oil and improving the quality of the final product. Optimally separated skim and cream can produce oil with better clarity and aroma, as well as extend the shelf life of the product.

Nagari Sikabu, Lubuk Alung, West Sumatra, is one of the areas producing tananak oil using traditional methods. However, the use of skim and cream separation technology has not been widely adopted in this area. This study aims to implement and evaluate the use of skim and cream separation technology in the process of making cooking oil in Nagari Sikabu. With this study, it is expected to find significant improvements in product quality and the potential for economic development for local communities.

2. Experimental Section

This study uses a case study method to explore the application of skim and cream separation technology in the cooking oil manufacturing process in Nagari Sikabu, Lubuk Alung, West Sumatra. Case studies were chosen as a research approach because they are appropriate for deeply understanding complex processes in specific and limited contexts, as well as for evaluating the impact of the application of this technology on the quality of cooking oil products.

2.1. Location and Subject of Research

This study was conducted in Nagari Sikabu, Lubuk Alung, West Sumatra, which is known as one of the areas that traditionally produces cooking oil. The subjects of the study were a group of cooking oil craftsmen who had been operating for generations. The selection of research subjects was carried out by purposive sampling, considering their experience in making cooking oil and their readiness to use new technology.

2.2. Research Design

This study uses a qualitative descriptive approach with a focus on the process of applying skim and cream separation technology. The research steps include:

- Initial Observation: Observations of the traditional cooking oil manufacturing process were carried out to understand the procedures commonly used, including cooking time, production results, and the quality of the oil produced.
- Technology Implementation: After initial observation, skim and cream separation technology was introduced to the artisan group. The researcher worked closely with technicians and artisans to ensure understanding and correct use of the skim and cream separator.
- Data Collection: Data collection was conducted through in-depth interviews with artisans, participant observation, and measurement of the quality of cooking oil produced before and after the application of the technology. Oil quality was measured based on standards of clarity, aroma, water content, and resistance to oxidation.

2.3. Data Collection Technique

- In-depth Interviews: Interviews were conducted with artisans of cooking oil to obtain information on their experiences, perceptions, and challenges faced in using skim and cream separation technology. Interviews were conducted in a semi-structured manner to allow artisans to explain in detail.
- Participatory Observation: The researcher was directly involved in the process of producing cooking oil using the new technology and observed the differences that occurred compared to traditional methods.
- Documentation: The cooking oil production process before and after the use of technology is documented in the form of photos and field notes to support further analysis.

2.4. Data Analysis

The collected data were analyzed qualitatively with a descriptive approach. This analysis involves several stages, including:

- Data Reduction: Data from interviews, observations, and documentation were summarized to identify key themes relevant to the research objectives.
- Data Presentation: The results of data reduction are presented in the form of descriptive narratives that describe changes in the process and results of cooking oil production after the application of skim and cream separation technology.
- Conclusion Drawing: Based on the results of the analysis, the researcher draws conclusions regarding the impact of the application of skim and cream separation technology on the quality of cooking oil and its production process.

2.5. Data Validity

To ensure data validity, this study uses source triangulation, namely by comparing information from interviews, observations, and documentation to ensure data consistency. In addition, member-checking is done by providing feedback on research results to craftsmen to obtain clarification and validation.

3. Results and Discussion

3.1. Application of Skim and Cream Separation Technology

The results of the study showed that the application of skim and cream separation technology in the cooking oil production process in Nagari Sikabu succeeded in increasing the efficiency of the production process and the quality of the oil produced. The use of this technology reduces the time for separating water and cream, which in the traditional method takes around 4-5 hours. After using the separator, the time was reduced by 50%, so that the production process became faster and more effective.

In interviews with craftsmen, the majority stated that this technology was relatively easy to use after several practices. This shows that technology transfer can be well received by local communities, as long as there is adequate assistance and training. These results are in line with Rogers' (2003) theory of innovation diffusion, where the acceptance of new technology by traditional communities can be achieved with a good communication approach and technical support.

3.2. Improving the Quality of Cooking Oil

Based on the results of measuring the quality of cooking oil produced, there was a significant increase in several parameters, including:

- Clarity: Cooking oil produced using skim and cream separation technology has a higher level of clarity compared to traditional methods. The resulting oil is clearer and free from residual

coconut particles that are often found in traditional products. This is in accordance with the opinion of Aripin (2017), who stated that more efficient cream separation can improve the visual and textural quality of the oil.

- **Aroma and Taste:** The results of sensory testing showed that the resulting oil had a stronger coconut aroma and a more authentic taste. Separation technology allows the oil to be extracted more purely without mixing with residue, which often affects the taste quality in traditional methods.
- **Resistance to Oxidation:** Testing the resistance of the oil to oxidation showed that cooking oil produced with new technology has a longer shelf life. This is due to the low water content contained in the oil, according to research by Suryanto and Subekti (2019) which found that low water content can extend the shelf life of coconut oil.

3.3. Socio-Economic Impact

In addition to quality, the application of skim and cream separation technology also has a positive impact on the socio-economic aspects of Nagari Sikabu. Tanak oil craftsmen reported that improving product quality allows them to sell oil at a higher price in the local market. This has a positive impact on household income. In focus group discussions, several craftsmen stated that clearer and higher-quality tanak oil is easier to market outside the region, opening up new economic opportunities for them.

From a social perspective, the application of this new technology also contributes to improving the skills and knowledge of craftsmen. With assistance in the use of technology, craftsmen not only master the skim and cream separator, but also gain a deeper understanding of the quality of raw materials and how to maintain product consistency. This supports the human capital theory which states that improving workers' skills and knowledge can have a direct impact on productivity and economic welfare.

4. Relation to Previous Theories and Research

The results of this study are consistent with several previous studies which show that component separation technology in the food processing process can improve production quality and efficiency. For example, research by Winarno (2015) shows that cream separation technology can improve the chemical and sensory stability of coconut oil. In addition, the modern food processing theory of Fellows (2009) also emphasizes that the use of appropriate technology can reduce the risk of contamination and increase product durability, which is evident in cooking oil in this study.

However, on the other hand, this study also found that challenges in implementing technology remain. Some craftsmen face obstacles in terms of initial costs to obtain separators and the need for intensive training, which were previously also expressed by Prasetyo (2020) in his study on technology adoption in small and medium industries. This shows that although technology provides many benefits, economic and training factors need to be seriously considered for the sustainability of technology adoption in the future.

3.5. Are the Research Objectives Fulfilled?

Based on the findings, it can be concluded that the application of skim and cream separation technology can significantly improve the quality of cooking oil, both in terms of clarity, aroma, taste, and shelf life. In addition, this technology also has a positive impact on craftsmen's productivity and economic aspects in Nagari Sikabu. Thus, the research objective to improve the quality of cooking oil through the application of this technology can be said to have been achieved.

However, this study also highlights the need for further support in terms of funding and training to ensure the adoption of this technology can take place sustainably. Therefore, further training

programs and partnerships with the private sector or government can be a solution to overcome the obstacles faced by craftsmen in accessing new technology.

4. Conclusion

This study shows that the application of skim and cream separation technology in the cooking oil production process in Nagari Sikabu, Lubuk Alung, West Sumatra, significantly improves the quality of the oil produced. This technology is able to accelerate the separation process, produce clearer oil, have a stronger aroma and taste, and extend the shelf life of the product. In terms of social and economic, this technology also has a positive impact on increasing the income of craftsmen and opening up wider marketing opportunities.

The findings of this study are in line with the theory of diffusion of innovation and previous research which confirms that the use of modern technology in food processing can improve product quality and production efficiency. However, challenges in implementing technology, especially related to initial costs and the need for intensive training, are still obstacles for craftsmen in fully adopting this technology.

Overall, this study successfully answered the objective of improving the quality of cooking oil through the application of skim and cream separation technology. However, the sustainability of the application of this technology requires additional support in the form of advanced training and access to funding to ensure wider and more effective adoption of the technology.

5. Acknowledgement

References