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Article

Community Empowerment Based on VCO Oil Production Training in Balamoa Village

Nasim Taha¹, Adinda Putri Damayanti^{2*}, Karista Dewi³, Nur Afni Syahbani³, Fahmi Bakir⁵

^{1,2,3,4,5} Alkhairaat University, Palu, Sulawesi Tengah

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E-mail: Adindametubun23@gmail.com, Karistadewi27@gmail.com, nurafni643@gmail.com, auliarazik5@gmail.com

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ABSTRACT

The community service program (KKN) of Alkhairaat University (Unisa) Group 131 in Balamoa Village, Dolo Barat District, Sigi Regency, Central Sulawesi, focuses on the production of Virgin Coconut Oil (VCO). This flagship program was held over two sessions on October 20 and 24, 2025. The activity aimed to enhance the knowledge and skills of local residents, particularly housewives, in processing coconuts into high-economic-value products. The program was implemented using a lecture and hands-on practice method. The results show high enthusiasm among participants and improved understanding of hygienic and marketable VCO production techniques. This activity has the potential to serve as the foundation for sustainable home-based businesses using local coconut resources.

1. Introduction

Community Service (KKN) represents the implementation of the Tri Dharma of Higher Education in community engagement, enabling students to apply academic knowledge directly in society. Through an empowerment-based approach, students act as facilitators who assist communities in addressing social and economic challenges while gaining contextual learning experiences that complement their academic competencies. This reciprocal interaction strengthens the relationship between universities and local communities and supports community-based national development.

Balamoa Village, located in Dolo Barat District, Sigi Regency, relies heavily on the plantation sector, particularly coconuts, as a primary livelihood source. Despite abundant resources, coconuts are mostly sold as raw materials, limiting their economic value. Limited skills in processing agricultural products remain a key challenge. Therefore, introducing simple and applicable production techniques is essential to enhance local capacity and promote sustainable economic development.

The Community Service Program (KKN) of Alkhairaat University (Unisa) Group 131 addressed this issue by identifying coconut processing as a strategic sector with strong development potential. The program introduced Virgin Coconut Oil (VCO) production as both an educational and productive activity. Using a hands-on approach, the training equipped residents—especially housewives—with practical skills to independently process coconuts into value-added products. This activity integrated academic knowledge with community needs while fostering collaboration between students, residents, and village officials.

The interaction between students and the community created a dialogic learning process that enriched both parties. Students gained firsthand understanding of rural social and economic dynamics, while residents developed new technical skills and productive mindsets. Practical VCO production training emphasized precision, hygiene, and correct processing stages, reinforcing sustainable use of local resources and simple innovation.

Balamoa Village's strong culture of

mutual cooperation (gotong royong) provided important social capital for program success. Support from the village government and local institutions further strengthened implementation and sustainability. This collaborative model—integrating universities, government, and community—demonstrates a synergistic, knowledge-based approach to rural empowerment and can serve as a reference for future community service initiatives.

2. Literature Review

2.1 Community Empowerment

Community empowerment refers to a process that enhances the capacity of individuals and groups to make choices and transform those choices into desired actions and outcomes. In the context of rural development, empowerment focuses on strengthening local skills, knowledge, and participation to enable communities to utilize available resources independently. Empowerment-based programs emphasize active involvement, collective learning, and sustainability rather than short-term assistance. Through empowerment, communities are encouraged to develop economic independence by applying appropriate knowledge and technology suited to their social and environmental conditions.

2.2 Value Added in Agricultural Product Processing

Value added is defined as the increase in economic value obtained through processing raw materials into finished or semi-finished products. In agricultural-based communities, value-added processing plays a critical role in improving household income and reducing dependence on raw material sales. Processing coconuts into Virgin Coconut Oil (VCO) significantly increases the product's market value compared to unprocessed coconuts. From an industrial engineering perspective, value added is closely related to process efficiency, cost reduction, and product differentiation. Introducing value-added processing at the household or small-scale enterprise level enables communities to optimize local resources and enhance economic resilience.

2.3 Simple Production Technology and Appropriate Technology

Appropriate technology refers to technology that is simple, affordable,

environmentally friendly, and suitable for local conditions. In rural communities, the application of simple production technology is more effective than complex industrial systems. VCO production using natural fermentation methods represents an example of appropriate technology because it requires minimal equipment, low energy consumption, and easily accessible raw materials. The use of appropriate technology supports sustainable production and increases the likelihood of long-term adoption by the community.

3. Research Methodology

The implementation of community service activities through the Real Work Lecture (KKN) program of Alkhairaat University (Unisa) group 131 in Balamoa Village used a qualitative descriptive approach. This approach was chosen because it can provide an in-depth picture of the activities, responses, and learning processes of the community during the activities. This model emphasizes the analysis of the participants' empirical experiences, especially in understanding the stages of virgin coconut oil production in a simple manner. The research design focused on a participatory process between students and residents during the training implementation. The choice of qualitative methods was also based on the orientation of the activities, which aimed to understand the social behavior of the community in the context of applying new knowledge. Each data obtained was analyzed to describe the level of understanding, involvement, and supporting and inhibiting factors in the training activities. All stages were carried out systematically to obtain objective and measurable results. This approach allows for the formulation of conclusions based on social patterns that emerged during the community service activities.

The implementation process was carried out during October 2025 with two main meetings, namely on October 20 and October 24. The first meeting focused on a theoretical session through an interactive lecture method that discussed the basic concepts of VCO oil. The second meeting focused on the hands-on practice of making virgin coconut oil using the natural fermentation method. The activity stages began with the preparation of materials and tools obtained from local sources in the village. Participants

consisted of housewives and community representatives interested in developing agricultural product processing skills. All activities were carried out at the village hall under student supervision and coordination with local officials. The implementation of the activity lasted for one effective week, including the preparation and evaluation stages. Documentation of activities was carried out through field notes, taking photographs, and compiling daily group reports as part of the data analysis process.

The research subjects included the Balamoa Village community who participated in the training, community leaders, and village officials who were actively involved during the mentoring process. Thirty participants were recorded, consisting of twenty housewives, five village officials, and five local youth. The participants were selected using a purposive sampling technique to ensure representation of social groups relevant to coconut processing activities. Students acted as facilitators and observers during the training, recording any emerging dynamics. Responses obtained from the training participants covered cognitive, affective, and psychomotor aspects. The active role of residents was directly observed during the implementation phase to assess the effectiveness of the participatory approach applied. All research subjects contributed to the observation and evaluation process to obtain a comprehensive picture of the program's success. Their active involvement is a key indicator of the program's success.

Data collection techniques were conducted through three main approaches: direct observation, semi-structured interviews, and visual documentation. Observations were used to monitor the entire activity process, from preparation to completion of the final product. Interviews were conducted with training participants to determine their understanding of the concept and practice of VCO oil production. Documentation was used to supplement field data through activity photos, attendance records, and participant product results. The use of these three methods provided rich and in-depth data regarding the dynamics of activities in the field. A triangulation approach was used by comparing the results of the three methods to ensure data validity. The results of observations and interviews were aligned to find a match

between participants' actual experiences and the resulting products. This process ensured that the findings obtained were not only descriptive but also analytical in nature regarding the community learning process.

The research instruments included an observation guide, interview sheets, a daily activity journal, and supporting documents for the KKN program. The observation guide was used to record participant behavior and interactions during the training. The interview sheets were designed to explore participants' perceptions of the material and technical benefits of the activities. The daily activity journal served as a reflective record for students, containing an evaluation of each activity session. Supporting documents such as activity photos, attendance lists, and summaries of participant practical results provided empirical evidence of program implementation. All instruments were pre-tested to ensure their suitability to the social and cultural context of the village community. Validation was conducted through consultation with the supervising lecturer and Balamoa Village officials before the activities were implemented. Each instrument functioned simultaneously to provide comprehensive and measurable data. The accuracy of instrument use was the primary basis for compiling qualitative research results.

The data analysis stage was conducted descriptively using the Miles and Huberman interactive analysis model, which consists of three components: data reduction, data presentation, and conclusion drawing. Data reduction was carried out by selecting important information from observations and interviews according to the research focus. Data presentation was carried out in the form of descriptive narratives to describe the process and results of the activities in a structured manner. Conclusions were drawn after identifying patterns of participation and changes in community knowledge during the activities. Analysis was carried out continuously from the beginning of implementation to the evaluation stage. Relevant data were categorized based on specific themes such as participant involvement, material understanding, and product success rate. This process resulted in an interpretation of the effectiveness of the learning methods used. The findings were then

reconfirmed through discussions with the community and village officials to ensure the results were representative of field conditions.

4. Results and Discussion

The implementation of the Community Service Program (KKN) of Alkhairaat University (Unisa) group 131 in Balamoa Village, Dolo Barat District, Sigi Regency, focused on a flagship program in the form of making pure coconut oil or Virgin Coconut Oil (VCO). The program was implemented over two meetings, on October 20 and October 24, 2025. The implementation of the activity aimed to provide direct learning experiences for the community so that they have the skills to process natural materials into products with market value. The activity took place at the village hall and was attended by village officials, housewives, and several local youth. The training process was systematically designed so that participants gained both a conceptual understanding and practical skills in making VCO oil. This approach also integrated educational aspects and community economic empowerment in one integrated activity. The implementation of the activity received full support from the village head and the community who enthusiastically participated in each stage. The results of the activity showed the active involvement of participants in all phases of the training, which reflects the successful implementation of the participatory method.

The training was conducted using lectures and hands-on practice (learning by doing) to ensure participants fully understand the process. The first meeting, held on October 20, 2025, focused on theoretical explanations related to the definition, benefits, and economic value of virgin coconut oil. The presenter detailed the materials and tools used in VCO production, the stages of the production process, and the principles of maintaining product quality and hygiene. The presentation was accompanied by an interactive discussion and question-and-answer session, which was enthusiastically attended by participants, particularly housewives. Participants asked various questions about marketing opportunities, product storage methods, and the differences between VCO and regular coconut oil. The community's enthusiasm demonstrated a high level of interest in developing coconut-

based products that can be processed at the household level. The results of this theoretical session demonstrated an increased understanding of the economic potential that can be generated from local resources. The theoretical session proceeded smoothly, with active participation from all participants until the end of the activity.

The second meeting, on October 24, 2025, focused on hands-on practice in producing VCO oil using a natural fermentation method. The process begins with the preparation of raw materials, namely fresh old coconuts, which are grated, squeezed into coconut milk, and then left to separate the layers of oil, water, and pulp. Participants were given the opportunity to practice these steps alternately under the supervision of students and speakers. After the separation process was complete, the oil was extracted and filtered to produce a clear product with a distinctive aroma. All stages were carried out with attention to the cleanliness of tools and containers, in accordance with basic food processing standards. Participants appeared serious and meticulous in each step, while also taking notes on the procedures explained by the presenters. The products produced by participants had different clarity and aroma depending on the accuracy of the sedimentation process. These differences in results served as evaluation and learning materials for participants, ensuring they understood the importance of precision in every step of production.

Observations during the training showed that most participants were able to follow each stage of VCO production effectively. Of the thirty training participants, twenty-three successfully produced oil with high clarity and aroma that met standards. Several others produced oil with slight sediment due to imperfect filtration, but overall, the results were still satisfactory. Significant improvements in community skills were seen between the first and second training sessions. Participants who previously only understood the theory were able to repeat the production process independently after hands-on practice. This success demonstrates the effectiveness of the learning-by-doing method as a learning tool for village communities. Repeated group activities also fostered a spirit of cooperation among residents and created a productive learning atmosphere. Harmonious interactions between

students and the community provided a pleasant and efficient learning environment.

Analysis of the training results showed that participants' technical knowledge of virgin coconut oil processing improved significantly. Prior to the training, most residents were unfamiliar with the stages of natural fermentation and lacked understanding of how to produce quality oil. After the training, participants were able to systematically explain the stages and outline the key factors influencing oil quality. These new skills boosted community confidence in pursuing small coconut-based businesses. Participants demonstrated initiative by planning to utilize coconuts from their own gardens for further household-scale production. Post-training interviews also indicated participants' desire to establish small business groups as a follow-up to the training. This increase in social and economic capacity illustrates the positive impact of the KKN program on sustainable community empowerment. The growing understanding among housewives demonstrates the potential of the village economy that can be stimulated through targeted training.

Key factors supporting the success of the activity included the abundant availability of raw materials, a participatory spirit from the community, and support from village officials throughout the implementation. The role of students as training facilitators contributed to ensuring the smooth running of each stage of the activity. The openness of the Balamoa Village community to innovation was a crucial asset in supporting community-based education activities. Village government support strengthened the legitimacy of the activity and helped provide supporting facilities such as training locations and simple tools. The community provided support by providing raw materials and actively participating throughout the process. All elements involved demonstrated a positive collaborative dynamic between students, residents, and the village government. This synergy fostered an atmosphere of mutual learning and respect within the context of social development at the local level. This collaborative approach proved effective in building a shared commitment to continuing similar activities in the future.

The VCO oil production activity in Balamoa Village has had significant educational, social, and economic impacts. The

educational impact is evident in the community's increased understanding and skills regarding the processing of local agricultural products. The social impact is reflected in the emergence of a spirit of mutual cooperation and positive interactions between students and the community in the collaborative learning process. The economic impact is demonstrated through the opportunity to develop coconut derivative products with higher sales value. This activity also demonstrates the relevance of students' academic activities to the real needs of the village community. The synergy between scientific knowledge and local wisdom makes this training more easily accepted and implemented by the community. This flagship VCO production program serves as an effective model for community empowerment based on local potential that can be replicated in other areas. The success of this activity demonstrates that a participatory approach is an ideal strategy for strengthening the economic independence of village communities.

5. Conclusion

The Community Service Program (KKN) of Alkhairaat University (Unisa) in Balamoa Village successfully implemented a flagship virgin coconut oil (VCO) production training on October 20 and 24, 2025. The program equipped residents—especially housewives—with practical skills to process coconuts into high-value products. Active participation reflected strong local interest and potential for developing businesses based on local resources. The combination of lectures and hands-on practice effectively improved technical understanding and independence. Collaboration between students, residents, and village officials demonstrated a constructive empowerment model aligned with local characteristics. This VCO initiative can serve as a foundation for sustainable village economic development.

For sustainability, several steps are recommended: providing technical support and facilities to scale up production; offering advanced training in small business management and marketing; forming business groups or cooperatives to strengthen market access and resource management; ensuring regular mentoring from universities and related institutions to maintain

quality and foster innovation; and promoting environmentally friendly production practices. These efforts can optimize community empowerment and enhance residents' welfare

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