

## Innovation in Diversification of Taro Processing into Sago Rangi as a Strategy to Increase the Economic Added Value of the Kemang Village Community

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### Abstract

*This community service research aims to develop innovative processing of taro into sago rangi as an effort to increase the economic added value of the community in Kemang Village, Bogor Regency, through the Thematic Community Service Program (KKN). The method used was descriptive qualitative with a participatory approach, involving the community in the outreach, training, and evaluation processes. The results indicate that the community has a good understanding of the potential of taro as a raw material for value-added products. Most participants expressed high enthusiasm for producing sago rangi on a household scale. Despite challenges in marketing and packaging, these findings indicate a change in community behavior, with people now more confident in developing businesses based on local products. In conclusion, the innovative processing of taro into sago rangi has the potential to increase economic added value and create positive social change at the village level. Recommendations for further research include increasing community capacity in product marketing and packaging, as well as developing sustainable business models for taro-based businesses.*

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## 1. INTRODUCTION

Rural economic development is a crucial agenda for improving community welfare and independence based on local potential. Indonesia, as an agricultural country, boasts abundant natural resources, including various local food crops with the potential to be developed into value-added products. One such local food commodity with significant potential is taro (*Colocasia esculenta*), which is widely found in tropical regions, including Indonesia. Taro is known as an alternative carbohydrate source with high starch, dietary fiber, vitamins, and minerals, making it a valuable raw material for processed food products (Tan et al., 2025; Yusnita & Ramadhan, 2020). In addition to its nutritional value, taro also exhibits high adaptability to various environmental conditions, making it easy for rural communities to cultivate (Hamalik, 2001). However, the use of taro at the community level is still relatively limited to simple consumption forms such as boiling, frying, or making chips, thus suboptimal economic value (Suryani & Anwar, 2021). This situation often results in taro being sold raw at relatively low prices, thus not significantly contributing to increasing community income (Zahra & Abidin, 2021). Therefore, innovative efforts are needed to develop taro's potential through diversification of processed products that can increase economic added value for rural communities (Asrori, 2021; Widodo & Santoso, 2021).

Food diversification based on local raw materials is one strategy that can be implemented to increase food security and strengthen the community's economy. The community's dependence on certain foodstuffs, such as rice and wheat flour, can make them vulnerable to price fluctuations and depend on food imports (Arbarini et al., 2022). Therefore, developing food products based on local ingredients, such as taro, is an alternative solution that can reduce dependence on imported foodstuffs while strengthening the local economy (Azizah & Elisabeth, 2017; Prayitno et al., 2022). Taro has a high starch content, making it potentially useful as a substitute ingredient in various food products, such as flour, cakes, and traditional food products modified through processing innovations (Heryadi et al., 2024). Furthermore, the development of processed taro products can also provide new business opportunities for the community, especially small businesses and households in rural areas (Tan et al., 2025; Widodo & Santoso, 2021).

Previous research has shown that processing taro into derivative products can increase economic value and community income when implemented through a community empowerment approach and food processing skills training (Sahabuddin et al., 2025). Thus, diversification of taro processing not only provides economic benefits but can also be part of a sustainable, locally-based economic development strategy (Choi & Park, 2020).

In the context of community empowerment, community service activities play a strategic role in bridging the transfer of knowledge from universities to the community. Universities, as educational institutions, play a role not only in education and research but also have a social responsibility through community service activities aimed at helping solve real-world problems in the community. Community empowerment-based service programs are typically implemented through outreach, training, mentoring, and skills development activities that can increase the community's capacity to manage its local potential. Several studies have shown that a community empowerment approach through local food processing innovations can improve the skills, knowledge, and awareness of utilizing available resources in their environment (Nurilmala et al., 2023). Furthermore, training and mentoring activities have also been shown to improve the community's ability to develop local food-based micro-enterprises, thus positively impacting community income (Prayitno et al., 2022). Therefore, community service activities focused on the development of processed taro products have the potential to make a significant contribution to the economic empowerment of rural communities.

One form of product innovation that can be developed from taro is processing it into sago rangi. Sago rangi is a traditional Indonesian snack generally made from sago flour, grated coconut, and brown sugar as a sweetener. The innovation of processing taro into sago rangi is carried out by utilizing taro as a substitute or mixed ingredient in making sago rangi dough, resulting in a traditional food product with a distinctive taste and higher economic value. This innovation not only provides a variety of taro-based processed food products but also opens up new business opportunities for rural communities. Previous research has shown that developing derivative products from taro through processing diversification can increase the added value of commodities and have a positive impact on the socio-economic conditions of the community (Heryadi et al., 2024). Furthermore, the use of taro as a food raw material is also in line with efforts to develop a local commodity-based agro-industry that can increase the competitiveness of local food products in the market (Sahabuddin et al., 2025). Thus, the innovation of processing taro into sago rangi is one strategy that can be implemented to increase the economic added value of taro commodities while supporting the development of a local food-based creative economy.

Based on initial observations in Kemang Village, Bogor Regency, it was discovered that taro is a relatively abundant agricultural commodity in the region. However, community utilization of taro is still limited to selling it raw to collectors at relatively low prices. This situation indicates a gap between the potential of available resources and their optimal utilization in community economic activities. Furthermore, the community also faces several obstacles in developing processed taro products, such as limited knowledge of food processing techniques, a lack of product innovation, and limited skills in product packaging and marketing. These problems mean that the economic potential of taro commodities cannot be fully utilized by the village community.

Therefore, a community service program is needed that aims to provide outreach, training, and mentoring to the community in developing innovative processed taro products into sago rangi as an alternative local food-based business.

Based on this background, this community service activity aims to introduce the innovation of diversification of taro processing into sago rangi to the people of Kemang Village as one strategy to increase the economic added value of local commodities. In addition, this activity also aims to increase the knowledge and skills of the community in processing taro into food products that have higher economic value. Through this socialization and training activity, it is hoped that the community can understand the economic potential of taro commodities and have the ability to develop small businesses based on taro-processed products independently. The formulation of the problem in this community service activity is: (1) how to implement the socialization activity of taro processing innovation into sago rangi to the people of Kemang Village, and (2) what is the level of understanding and response of the community to the innovation of taro processed products as an effort to increase economic added value. Thus, this community service activity is expected to contribute to improving community welfare through the optimal and sustainable utilization of local resource potential.

## **2. METHOD**

In this community service research, the research design used was descriptive qualitative with a participatory approach that allowed researchers to interact directly with research subjects and involve them in the planning and implementation process of community service activities. This method was used to gain an in-depth understanding of the community's response to the innovation of processing taro into sago rangi. The community service subjects in this study were the community of Kemang Village, Bogor Regency, consisting of a group of housewives and small business owners who have the potential to develop taro-based products. The location of the community service was Kemang Village, which has the potential for natural resources in the form of taro that has not been optimally utilized. The planning and organization process of the community was carried out through collaboration between the Thematic Community Service Program (KKN) team of the University of Muhammadiyah Bogor Raya with village officials and local community leaders. Community involvement in the planning is crucial to ensure that the activities carried out are in accordance with their needs. Before the implementation of the socialization, the KKN team coordinated with the community to determine the time, place, and targets of the activities. The research instruments used included observation, interviews, and documentation. Observations were conducted to assess community responses during the socialization and training activities, while interviews were used to explore community knowledge and perceptions about processing taro into sago rangi. Data obtained from interviews were analyzed using thematic analysis techniques, focusing on key themes emerging from the data. The data collection procedure was carried out in several stages: first, socialization regarding the potential of taro as a raw material for sago rangi products; second, training in making the product; and third, evaluation of the training results through interactive discussions, questions, and answers. The analytical method used was qualitative descriptive analysis, which aims to describe the level of public understanding of the product innovation and their response to the economic opportunities offered.

## **3. RESULTS AND DISCUSSION**

### **3.1 Community Service Results**

- a. Implementation of Socialization Activities for Innovation in Processed Taro Products into Sago Rangi

The community service activities carried out in Kemang Village, Bogor Regency, took place through several pre-planned stages. The first stage was outreach regarding the potential of taro as a raw material for sago. The Community Service Team from the

University of Muhammadiyah Bogor Raya held outreach activities that began with an introduction to the village's abundant taro potential. In the first session, the team explained the benefits of taro as an alternative carbohydrate-rich food and the opportunities for developing taro into new, value-added products.

The outreach process involved interactive lectures involving the community in discussions, as well as presentations on the techniques for processing taro into sago rangi. The activity also included a live demonstration of how to make sago rangi from taro. The community enthusiastically followed each step, both during the processing sessions and in open discussions about the product's market potential and economic benefits.

The following is Table 1, which describes the series of socialization activities carried out in Kemang Village:

Activity Stages	Description
Preparation	Coordination with village officials and local community leaders.
Delivery of Material	Introduction to the potential of taro as a raw material for sago rangi and product innovation.
Demonstration of Making	Making sago rangi from taro by the KKN team.
Discussion Session	Questions and answers regarding constraints in production and marketing potential.
Evaluation	Measuring the level of public understanding of the innovation being socialized.

Table 1. Stages of Socialization Activities

From this outreach activity, it can be concluded that the Kemang Village community has a high level of participation. Many people expressed interest in trying to make their own sago rangi at home. During the question-and-answer session, many questions arose regarding the production process and how to market it to expand consumption. This demonstrates a growing awareness among the community about the importance of product innovation to increase income.

b. Training on Processing Taro into Sago Rangi

The next stage of the community service program was training on processing taro into sago rangi. This training was conducted directly with community groups consisting of housewives and small business owners in Kemang Village. In this session, the community was taught how to select good taro, steaming and grinding techniques, and how to mix taro with other ingredients to produce high-quality sago rangi. This training aimed to provide practical skills that the community could immediately apply in their daily lives.

The image below shows the technique for processing taro into sago rangi:



Figures 1, 2, and 3. Techniques for processing taro into sago rangi



Figures 4 and 5. Introduction to Sago Rangi as a Traditional Snack

The community members who participated in this training demonstrated positive changes in attitude. Most participants felt more confident in processing taro into marketable products, something they previously considered a low-value commodity. Table 2 below illustrates the composition of the training participants and the feedback received during the session:

No	Type of activity	Number of participants	Feedback from Participants
1	Taro Processing Training	20 housewives	90% of participants felt ready to try at home
2	Sago Rangi Demonstration	15 small business owners	80% showed interest in small scale production
3	Marketing Discussion	18 participants	75% want to find a local market for this product

Table 2. Composition of Training Participants and Feedback

### c. Evaluation and Follow-up

Following the training, the Community Service Program (KKN) team evaluated to assess the community's understanding and mastery of sago rangi production techniques and their interest in developing a taro-based business. The evaluation involved direct observation during the sago rangi production process and interviews with several training participants to assess their perceptions of the business's potential. The evaluation revealed that most community members were able to successfully process taro into sago rangi, despite several challenges, such as limitations in product packaging and marketing.

Following the evaluation, follow-up measures, including further mentoring and guidance on packaging and marketing strategies, are planned. The group of housewives participating in the training is expected to first try selling sago rangi products on a small scale in their neighborhoods. Several community members have expressed a desire to form small business groups focused on producing sago rangi made from taro.

### d. Social Change and Impact on Communities

The results of this community service activity demonstrate significant social change in the Kemang Village community. One example is the emergence of local leaders who play a role in motivating other community members to develop their own businesses. Housewives, previously solely consumers of taro, have now shifted their roles to become local producers. Furthermore, the community has begun to innovate in taro processing, increasing the product's sales value and competitiveness.

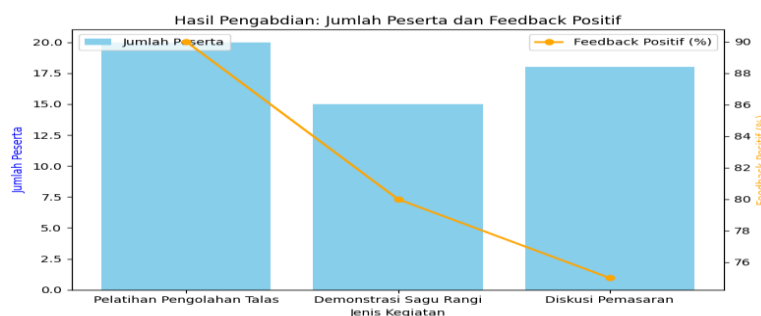
Furthermore, this activity also raised a new awareness among the community that the local potential in their village could be maximized. This behavioral change was evident in their courage in trying to sell innovative products like sago rangi and seeking opportunities to introduce their products to a wider market.

With this training and mentoring, it is hoped that a new institution will be formed in the village economy, namely businesses based on local food products that can improve community welfare in a sustainable manner.

### e. Conclusion of Community Service Results

Overall, this community service activity successfully increased the understanding and skills of the Kemang Village community in processing taro into sago rangi, and opened up new opportunities to increase the economic value of local commodities. The resulting social changes, including the emergence of local leaders, active community involvement, and the formation of taro-based small business groups, indicate that this activity has had a tangible positive impact on the community.

The results of community service in Kemang Village can also be seen in the graph below:



Graph 1. Number of Participants and Positive Feedback

The graph above illustrates the results of community service activities in Kemang Village. It displays the number of participants in each activity and the percentage of positive feedback received from participants:

- Bar Chart: Shows the number of participants for each type of activity (Taro Processing Training, Sago Rangi Demonstration, and Marketing Discussion).

- b. Line Plot: Shows the percentage of positive feedback given by participants for each activity.

Further assistance regarding product marketing and packaging will be key to strengthening the results of this community service so that it can provide long-term benefits for the Kemang Village community.

### 3.2 Discussion

Community service in Kemang Village, Bogor Regency, aimed at developing innovative products from taro into sago rangi (sago rangi), demonstrated positive results in improving community knowledge and skills. The results of the outreach activities indicated a high level of community participation. Many residents expressed interest in trying to make sago rangi at home. During the Q&A session, many questions arose regarding the manufacturing process and how to market it to expand consumption. This demonstrates a growing awareness within the community about the importance of product innovation to increase income (Rogers, 2003; Widodo & Santoso, 2021). Previously, the community viewed taro as a low-value commodity, but after the outreach and training activities, they began to recognize its significant potential as a raw material for value-added products (Yusnita & Ramadhan, 2020).

Observations and interviews with training participants showed that most community members successfully mastered the technique of making sago rangi from taro. Several participants also expressed interest in expanding their production by marketing the product locally. This aligns with research conducted by Prayitno et al. (2022), which revealed that an empowerment-based approach through training can improve community skills in processing local products and help increase their income. However, several obstacles remain related to product marketing and packaging, indicating the need for further assistance in the business aspect (Prayitno et al., 2022; Sahabuddin et al., 2025).

These findings also indicate the potential for social change in the community, where housewives, previously solely consumers of taro, are now beginning to act as local producers. This reflects the diffusion of innovation theory proposed by Rogers (2003), which states that the adoption of innovation within a community is strongly influenced by effective communication and community participation in the socialization process. This process is also supported by community empowerment theory, which emphasizes the importance of training and mentoring to increase community capacity in managing their local potential (Hamalik, 2001; Arbarini et al., 2022).

From a community empowerment theory perspective, this program illustrates how participatory activities and direct mentoring can accelerate the process of economic empowerment. In line with the concept put forward by Hamalik (2001), which emphasizes the importance of non-formal education in improving community skills in facing economic challenges, this community service program provides practical skills that can be directly applied by the community. The training provided provides technical knowledge on how to process taro into sago rangi and provides strategies for managing small businesses, such as how to market products effectively.

One theoretical finding relevant to the results of this community service is the importance of a community-based approach in implementing product development based on local resources. Arbarini et al. (2022) revealed that the success of innovation in a community is greatly influenced by the sustainability of mentoring and strengthening of local capacity. In Kemang Village, although many residents are interested in developing taro-based businesses, further mentoring related to product marketing and packaging is needed to ensure the long-term success of these businesses. This is also supported by the findings of Kotler and Keller (2016), who stated that market education and appropriate product communication strategies are key to introducing new products to a wider market.

This community service process has brought about the expected social change in the form of a transformation of the community's role from consumers to local producers. The Kemang Village community, which previously only sold taro in its raw form at a relatively low price, has now begun to process taro into value-added products such as sago rangi. This behavioral change closely reflects the theory of social change proposed by Rogers (2003), which explains that social change often occurs through the diffusion of innovations that involve a process of acceptance and adaptation to change. In this case, the acceptance of the innovation of processing taro into sago rangi created a new awareness of the village's previously unseen economic potential.

Over time, the success of this outreach and training program has also led to the emergence of local leaders who can play a key role in introducing and developing processed taro products. Several training participants have begun to demonstrate initiative in forming small business groups focused on producing taro-based sago, demonstrating the emergence of new institutions within the village economy based on local products. These findings support Notoatmodjo's (2001) theory that collaborative community empowerment can accelerate sustainable social change at the village level.

Literature on local product-based economic empowerment suggests that one effective way to address poverty and dependence on imported commodities is to develop local products with added value. Sahabuddin et al. (2025) in their research stated that processing local products into value-added products has significant potential to improve the economic well-being of rural communities. This is also relevant to the results of this community service, which successfully changed the community's perception of taro as a local commodity with broad market potential, both for local consumption and the wider market.

Overall, this community service activity has successfully facilitated the development of productive businesses based on taro, a local food previously considered a low-value staple. The innovative process of processing taro into sago rangi has not only increased community income but also created social transformation at the village level. People who previously lacked the courage to become entrepreneurs are now embracing micro-enterprises based on local commodities that can be managed independently.

The community-based approach used in this community service has had a positive impact on increasing public acceptance of taro-based product innovations. According to Sahabuddin et al. (2025), success in developing local products depends on ongoing mentoring and strengthening of local capacity, which is essential to ensure long-term success.

Thus, the results of this community service program make a tangible contribution to the economic empowerment of rural communities by processing taro into value-added products, while simultaneously strengthening the role of universities in implementing social responsibility through community service activities. This activity provides a clear illustration that product innovation based on local resources can have a positive impact on improving community economic well-being, provided there is ongoing support and capacity building for the community in the micro-enterprise sector.

#### 4 CONCLUSION

This community service research successfully demonstrated that the innovation of processing taro into sago rangi can increase the economic added value for the community of Kemang Village, Bogor Regency. The community service process began with socialization regarding the abundant potential of taro in the village, followed by technical training on how to process taro into sago rangi that can be developed as a commercial product. The community's active participation in this activity demonstrated a new awareness of the importance of innovation to increase the selling value of local products. The results of this study indicate a change in community behavior, from initially only considering taro as a low-value commodity to becoming more creative and confident in processing taro into a more valuable and marketable product.

Theoretically, these findings support the diffusion of innovation theory, which states that communities will adopt an innovation when the information dissemination process is carried out in a participatory manner and involves direct interaction with the community (Rogers, 2003). This participatory approach in community service has proven effective in introducing and adopting innovations, because the community is actively involved in all stages, from socialization to training. This is also in line with the concept of community empowerment, which prioritizes providing practical knowledge and skills that can be directly applied to improve the quality of life and the community's economy (Hamalik, 2001).

This activity also creates local leaders who become drivers of taro-based businesses and opens up opportunities for communities to form micro-enterprise groups focused on taro processing. Thus, this activity leads not only to economic growth but also to social transformation at the village level.

#### Suggestions for Future Research

While the results of this community service have had a positive impact on the community, challenges remain, particularly in terms of product marketing and packaging. Therefore, a key recommendation for future research and community service is to increase the community's capacity in marketing and product packaging strategies to expand the market for processed taro products. More intensive mentoring and collaboration with external parties, such as marketing agencies or digital platforms, should also be considered to help the community market their products more widely.

Furthermore, further research could develop sustainable business models for taro-based businesses in other villages with similar potential. A more in-depth approach to identifying supply chains and product distribution strategies would also be beneficial. Further research could also explore other taro-based product innovations and assess their impact on food security and village economic independence.

Thus, this community service activity makes a real contribution to empowering village communities, not only improving economic well-being but also driving social and cultural change at the village level. With ongoing mentoring and the active role of universities, local resource-based innovation can become a crucial catalyst for social transformation toward village economic independence.

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With excellent support and collaboration from all parties, we hope that the results of this research can provide great benefits to the people of Kemang Village and can serve as a reference for the development of local product-based businesses in the future.

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