

From Local Potential to Value-Added Products: Empowering PKK Women through the Diversification of Moringa-Based Products in Pappalluang Village

Burhanuddin¹, Nadir¹, Herman², Nuryanti Mustari¹, Amina¹, Nurfadhilah Paisal¹

¹Universitas Muhammadiyah Makassar, Indonesia

²Universitas Cokroaminoto Makassar, Indonesia

Email: buran@unismuh.ac.id, herman@ucm-si.ac.id

Abstract. *In rural areas, the utilization of moringa plants is often limited to household consumption, despite their potential for development into value-added food products. This situation is evident in Pappalluang Village, Jeneponto Regency, where moringa is readily available in households but has not yet been processed into economically valuable products. This community service initiative aimed to strengthen the capacity of PKK (Family Welfare Empowerment) members to utilize moringa leaves through food product diversification based on local potential. The activity took place on August 9, 2026, involving 15 PKK members from Pappalluang Village. A participatory approach was employed, comprising awareness-raising sessions, material presentations, demonstrations, hands-on processing practice, packaging, labeling, and an introduction to market opportunities. The results indicate that participants gained knowledge and practical experience in processing moringa leaves into food products, specifically moringa biscuits/snacks and beverages/juices. A tangible outcome was the production of packaged moringa biscuits branded as "Kelorina." Beyond production skills, participants gained foundational understanding regarding packaging, labeling, pricing, and marketing strategies. The activity demonstrated that a practice-based approach can serve as a gateway to empowering women to transform local food resources into value-added products. However, business development, cost recording, actual marketing, and production sustainability still require further guidance.*

Keywords: *Women's Empowerment, PKK Members, Moringa, Food Diversification, Local Potential, Value-Added Products*

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INTRODUCTION

The utilization of local resource potential is one of the strategic approaches to promoting community empowerment while increasing economic value at the household level (Indraswari et al., 2026; Insani, 2022; Munandar et al., 2025; Sarfan et al., 2026; Triastuti et al., 2025). Rural areas generally possess various natural resources that can be utilized as food sources. However, the availability of these resources is not always accompanied by the community's capacity to process them into products with added value (Hardiani et al., 2021; Listiana et al., 2025; Silitonga, 2026; Vuspitasari et al., 2023). The gap between the availability of local resources and the

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community's capacity to diversify and downstream these resources into value-added products remains an issue that requires attention in community empowerment programs (Gussyafri et al., 2025; Yuniasih, 2025).

One of the local resources with considerable development potential is moringa (*Moringa oleifera*). Moringa leaves are known to contain various nutrients and bioactive compounds, making them suitable not only for consumption as vegetables but also for development into a variety of processed food products (Islam et al., 2021; Kashyap et al., 2022; Patil et al., 2022). The literature used in the activity proposal indicates that moringa leaves contain protein, vitamins, minerals, and bioactive compounds that support their development as a food ingredient (Rahmiati et al., 2023; Filianty et al., 2022; Nofrida et al., 2023; Taufiq et al., 2026; Yunita et al., 2022). This potential provides an opportunity for communities to diversify food products while creating products with higher added value than moringa consumed solely in its fresh form.

This potential is also found in Pappalluang Village, Bangkala Barat District, Jeneponto Regency. Moringa plants are relatively easy to find around residents' homes, indicating that the community has a relatively strong initial supply of raw materials. However, the utilization of moringa by the community remains largely limited to household consumption, particularly as a vegetable. This condition indicates that the potential of local raw materials has not yet been fully developed into diverse and value-added processed products.

The issue is not limited to food processing technology but also concerns human resource capacity. The availability of moringa plants does not automatically generate economic benefits if community members do not possess the knowledge and skills required for processing, diversification, packaging, labeling, pricing, and marketing. In other words, the primary challenge is not merely how to provide raw materials but how to transform these raw materials into products with functional and economic value (Djam'an et al., 2025; Masniati et al., 2023).

In this context, the Family Welfare Empowerment group (*Pemberdayaan Kesejahteraan Keluarga*, PKK) occupies a strategic position. The PKK group has experience in implementing various social, community, and family-oriented activities, providing social capital that can be developed into productive activities. The activity proposal indicates that the partner group has already established collective activities; however, the utilization of local potential as a basis for economic activities has not yet developed optimally.

Empowering PKK women through the development of moringa-based food products is relevant because women not only play an important role in household food management but also have the potential to become key actors in product development and household economic activities. By improving their skills, women's groups can transition from being consumers of local food resources to becoming actors capable of creating added value from resources available in their surrounding environment (Ariyani et al., 2026; Heryadi et al., 2022; Minggu et al., 2023).

This issue becomes particularly relevant because Pappalluang Village is geographically characterized as a highland area with relatively challenging accessibility. These geographical conditions make the area relatively difficult to reach and result in limited exposure to community empowerment activities. For the community service team, this condition provides an important rationale for delivering activities directly within the community. This approach places the community at the center of the intervention rather than requiring community members to travel to training centers located in more accessible areas.

In addition to the issue of local resource utilization, Pappalluang Village also has a public health context that needs to be considered. Based on field information underlying the implementation of the activity, the village is among the areas experiencing a high stunting burden in Jeneponto Regency (Adam et al., 2024; Hermawan et al., 2026; Nurlela et al., 2025). This condition provides additional context for developing the utilization of local foods, including moringa, as part of efforts to introduce food diversification to the community.

Nevertheless, it is important to position this activity proportionately. This community service program was not designed as a clinical intervention or an evaluation of changes in stunting prevalence. Therefore, the success of the activity was not measured based on changes in stunting prevalence. Instead, the focus was placed on strengthening community capacity to identify, process, and develop local food resources, which conceptually may form part of a broader ecosystem of household food empowerment and education (Christyaningsih et al., 2023; Amelia et al., 2025).

Based on these conditions, the community service team designed an activity integrating production skill development, product development, packaging, labeling, and entrepreneurship education (Djam'an et al., 2025; Nasrulloh et al., 2022). The approach employed was not limited to lectures or the delivery of theoretical materials but also incorporated demonstrations and hands-on practice (Abidin et al., 2022; Rahmah et al., 2025). This strategy was selected because food processing skills are more likely to be mastered when participants have opportunities to observe the process, practice directly, and produce the resulting products. Thus, the empowerment process was expected to progress from knowledge transfer toward actual skills acquisition (Sunarsih et al., 2024; Aryani et al., 2025).

The activity was attended by 15 members of the Pappalluang Village PKK group. Participants were introduced to various possibilities for diversifying moringa-based products and subsequently participated in practical sessions involving the processing of moringa into biscuits/snacks and moringa beverages/juice (Setianingsih et al., 2023; Purwanti et al., 2023). One concrete achievement of this process was the development of a moringa biscuit product identified as "Kelorina."

The emergence of Kelorina is significant because it demonstrates a simple yet strategic transformation: moringa leaves, which were previously perceived primarily as vegetables, began to be positioned as a raw material for food products that could be packaged and given a distinct product identity (Kamalia et al., 2023; Kaleka et al., 2023). Thus, the activity did not stop at increasing knowledge but also resulted in a tangible product that can serve as a starting point for further development (Agustiawan et al., 2025).

However, the successful production of a product cannot automatically be regarded as the success of a business enterprise. At this stage of the activity, sufficient data were not yet available to measure increases in turnover, profits, repeat sales, or household income. Therefore, the achievement of the activity in this article is positioned primarily as initial capacity building and early-stage product readiness (Fadeli et al., 2024; Utami & Widowati, 2026).

This positioning is academically important because it distinguishes between outputs, outcomes, and impacts. The Kelorina product represents a concrete output of the activity. The participants' ability to understand and practice moringa processing constitutes an initial outcome. Meanwhile, increases in income, business sustainability, or contributions to changes in nutritional status represent impacts that require longer-term processes and measurement (Herwina et al., 2025; Widayati et al., 2025). Within this framework, the community service activity offers an empowerment approach that connects local resource potential, women's capacity development, food diversification, and the creation of value-added products (Agustiawan et al., 2025; Aryani et al., 2025).

Partner Problems

Based on the initial conditions of the partner group, several major problems formed the basis for implementing the activity. First, there was limited diversification in the utilization of moringa. Although moringa plants are readily available within the community, their utilization remained largely limited to household consumption and had not developed into a variety of processed products. Second, there was limited technical processing capacity. The partners did not yet have adequate experience in processing moringa leaves into food products such as

biscuits/snacks and beverages. Third, there was a lack of orientation toward value-added products. Moringa was still perceived primarily as a food ingredient rather than as a raw material that could be developed into products with distinct identities and economic value. Fourth, limitations existed in product downstreaming. Prior to the activity, the partners' capacities in product packaging, labeling, pricing, and marketing had not yet developed optimally. Fifth, geographical challenges were also present. The characteristics of Pappalluang Village as a highland area with relatively difficult accessibility constitute one of the factors requiring empowerment activities to be conducted directly at the community level. These problems indicate that the intervention required was not merely the provision of information regarding the benefits of moringa but the gradual strengthening of capacity from upstream to downstream.

Proposed Solution

Based on these problems, the community service program offered a solution in the form of capacity strengthening for PKK women through practical training in the diversification of processed moringa leaf products. The solution was designed through several components. First, knowledge enhancement was provided by introducing participants to the potential of moringa, its utilization as a food ingredient, opportunities for product diversification, and market opportunities for moringa-based products. Second, production skills were strengthened through practical sessions in processing moringa into biscuits/snacks and moringa beverages/juice. Third, downstream product development was strengthened by introducing participants to packaging, labeling, product identity, and pricing. Fourth, entrepreneurship was introduced by providing participants with initial knowledge regarding market opportunities, local marketing, digital marketing, and group-based product development.

METHODS

This community service activity employed a participatory practice-based approach that positioned participants as active subjects in the learning process. The approach was selected because the partners' challenges were not limited to a lack of knowledge regarding the potential of moringa plants but also included limited skills in processing moringa into more diverse and value-added food products. The activity was implemented in stages, beginning with the introduction of local potential, knowledge enhancement, demonstrations, processing practices, packaging and labeling, and continuing with the introduction of entrepreneurship and marketing. This design was consistent with the activity proposal, which identified production, business management, packaging, marketing, mentoring, and sustainability as key components for strengthening partner capacity. The activity was conducted on August 9, 2026, in Pappalluang Village, Bangkala Barat District, Jeneponto Regency, involving 15 PKK women as the primary participants. The location was selected based on the relatively high availability of moringa plants within the community, although their utilization remained largely limited to household consumption. Pappalluang Village is also a highland area with relatively challenging accessibility, making direct community-based empowerment activities particularly important. The selection of the PKK group was based on its members' experience in social and community activities and its potential to be developed into a productive group based on local resources. These initial conditions provided the basis for the community service team to introduce moringa utilization through food product diversification.

The activity began with socialization and the delivery of materials concerning the potential of moringa plants, the benefits of food diversification, opportunities for product development, and basic aspects of packaging, labeling, pricing, and marketing. Following the instructional session, participants took part in a processing demonstration to observe directly the stages involved in transforming moringa leaves into food products. The activity then proceeded to hands-on practice by the participants, ensuring that the learning process extended beyond knowledge transfer toward practical experience and skill development. This approach was intended to help participants understand that moringa, which had previously been used primarily

as a vegetable, could be developed into various food products with different forms and added values. The materials on diversification, packaging, labeling, pricing, and marketing were incorporated as part of the activity design established in the initial proposal. During the practical stage, participants gained experience in processing moringa leaves into biscuits/snacks and moringa beverages/juice. One concrete achievement of the activity was the production of a moringa-based biscuit product subsequently given the identity "Kelorina." The product was then packaged and labeled as an initial step toward developing a product that would be more ready to be introduced to consumers. This achievement demonstrates a transformation process from local raw materials into a food product with a defined form, packaging, and product identity. The development of moringa biscuits was also consistent with the activity target formulated in the proposal, namely to produce processed moringa products that could subsequently be developed by the partner group.

The activity was evaluated descriptively based on participants' involvement throughout the training process, their ability to follow the processing practices, the products successfully produced, and the results of packaging and labeling. Activity documentation was used to strengthen the evidence of the implementation process and achievements. The analysis was conducted by comparing the partners' initial conditions with the achievements following the activity, particularly in terms of knowledge of moringa diversification, processing skills, the ability to produce food products, and initial understanding of packaging and marketing. Through this approach, the success of the activity was assessed not merely from the implementation of the training but also from the achievement of tangible outputs in the form of products and strengthened participant capacity. The evaluation was descriptive because the activity was not designed as an experimental study and did not employ a control group. The methodology has limitations because the evaluation was conducted at an initial stage and therefore could not be used to measure long-term impacts, such as increases in household income, sales turnover, business profits, or changes in stunting prevalence. Accordingly, the achievements of the activity were positioned as initial capacity building and early-stage product development. The Kelorina product represents the concrete output of the activity, while improvements in participants' knowledge and skills constitute initial outcomes that require further mentoring. The subsequent sustainability of the program is directed toward strengthening production capacity, product standardization, cost recording, packaging development, marketing, and group business management so that the skills acquired can develop into sustainable economic activities based on local resource potential.

RESULTS AND DISCUSSION

The community service activity in Pappalluang Village demonstrated that the local availability of moringa plants could serve as a starting point for strengthening women's capacity in local food development. Held on August 9, 2026, the activity involved 15 members of the PKK (Family Welfare Empowerment) group and received support from the Pappalluang Village government. Prior to the activity, local utilization of moringa was largely limited to household consumption as a vegetable, despite the plant being readily available in residents' home gardens. This situation highlighted a gap between the availability of raw materials (upstream) and the community's ability to develop products (downstream).

The activity also revealed that moringa-based food processing was underdeveloped in terms of product variety, sanitation, quality consistency, and packaging techniques. Consequently, the intervention did not aim to introduce entirely new resources, but rather to shift the community's perspective on and utilization of resources already present in their environment. The empowerment process employed a combination of lectures, demonstrations, and hands-on practice. Participants were introduced to the potential of moringa and the various possibilities for product diversification at the household level. The material covered product processing, market opportunities, packaging, labeling, pricing, and marketing strategies, including the use of digital media.



Figure 1. Community Service Activity in Pappalluang Village, Jeneponto Regency

A practice-based approach is crucial because the activity aims not merely to enhance participants' knowledge but to provide hands-on experience in transforming raw materials into finished products. This approach is particularly relevant to the local PKK women's group, whose activities had previously focused largely on social and community affairs rather than on productive, home-based economic activities. Through this learning process, participants are introduced to the interconnections between raw material potential, processing skills, the resulting products, and economic opportunities.



Figure 2. PKK Women Practice how to Process Moringa Leaves Into Biscuits/Snacks

The activity results demonstrate that participants gained new experience in diversifying the use of moringa leaves. During the sessions, participants engaged in the practical processing of moringa into biscuits or snacks, as well as beverages or juices. For the participants, this process revealed that moringa need not be limited to its fresh form but can be transformed into a wider variety of products with distinct consumption characteristics. Conceptually, this diversification represents a simple form of value addition, as a raw material previously consumed in a relatively basic state undergoes processing to become a product with new forms and functions. The program was specifically designed to introduce processed products that can be made using simple household equipment, ensuring the introduced techniques are easily replicable by the community. Consequently, the activity is best understood as a process of enhancing the community's technical capacity rather than merely a food preparation demonstration.



Figure 3. Processed moringa products in the form of biscuits/snacks and moringa beverages or juice

The most concrete achievement of the activity was the production of moringa-based biscuits. The product developed during the activity was given the identity “Kelorina,” providing it with a clearer product form and identity compared with moringa as an unprocessed raw material. The emergence of Kelorina is significant from an empowerment perspective because it demonstrates a transformation of local resources into a product that has begun to acquire the characteristics of a food product. In the initial activity design, moringa biscuits were explicitly identified as one of the products targeted for development by the partners. The proposal established at least one type of moringa biscuit as one of the production indicators. Therefore, the production of moringa biscuits represents an achievement that is directly aligned with the program target. Furthermore, assigning the name Kelorina indicates that the activity has begun to move beyond simply “processing moringa” toward the initial stage of “developing a moringa-based product.”

In addition to product development, the activity introduced participants to product packaging and product identity. Packaging occupies an important position in the downstreaming process because processed food products require an appropriate form of presentation before they can be introduced to consumers. In this activity, Kelorina was packaged and provided with a product identity. This achievement demonstrates that the empowerment process began to move beyond production toward downstream product development. This finding is consistent with the program design, which positioned packaging and labeling as components of increasing product added value. The proposal established the availability of processed moringa products with simple packaging and labeling, as well as increased product readiness for local marketing, as program targets. However, because the most clearly documented achievement was the Kelorina product, the results in this aspect are more appropriately described as an initial achievement in packaging and branding rather than as the fulfillment of the entire target of three packaged products.

From the perspective of women's empowerment, the activity provided PKK women with new experiences in connecting activities that had previously been primarily social in nature with potential group-based productive activities. The group's social capital represents an important factor because PKK members are accustomed to conducting activities collectively. The proposal identified that previous PKK activities were predominantly social and ceremonial in nature, including community health-post activities (*posyandu*), communal food-related activities, and other community activities, while strengthening household economic skills had not been a primary focus. Moringa processing training provided an alternative activity that could be developed using resources already available within the community. Thus, the significance of the

activity lies not only in the product produced but also in the emergence of collective experience in the production and development of local products.

Nevertheless, the results of the activity need to be interpreted proportionately. Although the activity successfully produced a product and provided participants with new experiences and skills, the available evidence is not sufficient to conclude that the PKK group has successfully established a commercially viable business. Several indicators outlined in the proposal, including production and cost records, role distribution within the group, and local product marketing, require further mentoring and implementation. The proposal itself positions business record-keeping and role distribution as components of the mentoring stage, while local marketing is positioned as a later stage of the program. Therefore, the achievements at this stage are more appropriately categorized as initial capacity building, production skill development, and product readiness, while business sustainability still requires further intervention.

These findings indicate that empowerment based on local resource potential should not stop at technical training. Product development requires continuity between production capacity, business management, product identity, and marketing. The activity proposal also emphasizes an integrated solution extending from production to packaging and marketing, thereby establishing an upstream-to-downstream sequence for local food-based enterprise development. In the context of Pappalluang Village, this sequence is particularly important because moringa raw materials are relatively abundant, while the capacity to transform them into value-added products still requires strengthening. Accordingly, the existence of Kelorina can be viewed as an entry point for business development rather than as the final outcome of the program.

Overall, the results demonstrate that practice-based training can serve as an initial instrument for strengthening women's capacity to utilize local food resources. Participants not only gained information about the potential of moringa but also directly experienced the process of transforming raw materials into food products. This transformation can be conceptualized as a process of local potential → knowledge → skills → diversification → product → product identity → business readiness. Within this process, Kelorina represents a concrete manifestation of the transformation. However, to ensure that this transformation develops into sustainable economic benefits, further mentoring is required in product standardization, production cost recording, group role allocation, packaging improvement, marketing, and production sustainability evaluation

CONCLUSION

The community service activity in Pappalluang Village, Bangkala Barat District, Jeneponto Regency, demonstrated that leveraging local potential through the empowerment of women's groups can serve as an initial step toward enhancing community capacity for food diversification. Involving 15 members of the PKK (Family Welfare Empowerment) group, the activity provided participants with hands-on experience in identifying the potential of moringa leaves, processing them into food products, and understanding the fundamentals of product development and entrepreneurship. A practice-based, participatory approach enabled participants not only to acquire knowledge but also to engage directly in the processing workflow. Tangible outcomes were evidenced by the participants' success in processing moringa leaves into biscuits/snacks and moringa-based beverages/juices; one of the biscuit products was branded "Kelorina." These results illustrate a transformation in moringa utilization—shifting from limited household consumption to the creation of food products possessing distinct forms, identities, and initial added value. Product packaging and labeling also introduced participants to the importance of downstream processing (value-added activities) in developing food products based on local resources.

The activity further demonstrated that empowering PKK members need not begin with the creation of entirely new resources; instead, it can be achieved by optimizing resources already available within the community. In the context of Pappalluang Village, the existing moringa plants

served as a foundational asset that could be developed through enhanced knowledge, processing skills, product diversification, and an introduction to entrepreneurship. Thus, the activity laid the groundwork for developing productive initiatives driven by women's groups and local resources.

However, the achievements to date remain at the stage of capacity building and initial product development. The activity has not yet yielded empirical evidence regarding increases in income, sales turnover, business sustainability, or changes in stunting prevalence. Consequently, continued assistance is required, covering areas such as process and product quality standardization, production cost recording, improvements to packaging and product legality, marketing strategies, the division of group roles, and monitoring of production sustainability. These subsequent stages are essential to ensure that the skills acquired do not merely remain the outcome of a training session but evolve into sustainable group-based economic activities. Overall, this activity demonstrates that diversifying processed moringa products through a practice-based, participatory approach is a viable strategy for the initial stage of empowering PKK women in rural areas with local resource potential. The "Kelorina" product serves as early evidence that locally available resources can be transformed into value-added products through community capacity building. The program's subsequent sustainability is a crucial factor in determining whether these initial achievements can evolve into broader economic and social benefits for the community of Pappalluang Village.

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