



Integrating Nutrition Education and Entrepreneurship Development In Nagubi (Cassava Leaf Nuggets) Product Development: A Multidisciplinary Collaboration Model for Empowering Coastal Communities in Boneatiro Barat District, Buton Regency, Indonesia

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Info Article Received : 01 Mei 2026 Revised : 03 Juni 2026 Accepted : 02 Juli 2026 Publication : 31 Juli 2026	Abstract: <i>This community service program aimed to develop NAGUBI (Cassava Leaf Nuggets) by integrating nutrition education and entrepreneurship strengthening as a community empowerment model for coastal communities. The program employed a participatory approach involving lecturers from the fields of health and management. The activities included community needs assessment, nutrition education, NAGUBI production training, product packaging, marketing, business mentoring, and program evaluation. Data were collected through observation, documentation, discussions, and field notes, and were analyzed using a descriptive qualitative approach. The results demonstrated improved participants' understanding of the nutritional value of cassava leaves, enhanced skills in producing NAGUBI, and strengthened basic business management competencies. The program contributed to increasing the added value of local food resources, promoting community economic self-reliance, and strengthening the sustainable economic potential of coastal communities through innovation based on local resources.</i>
Keywords: Nutrition Education, Entrepreneurship, Community Empowerment Kata Kunci: Edukasi Gizi, Kewirausahaan, Pemberdayaan Masyarakat	
Licensed Under a Creative Commons Attribution 4.0 International License 	Abstrak: Kegiatan pengabdian kepada masyarakat ini bertujuan mengembangkan produk NAGUBI (Naget Daun Ubi Kayu) melalui integrasi edukasi gizi dan penguatan kewirausahaan sebagai model pemberdayaan masyarakat pesisir. Program dilaksanakan menggunakan pendekatan partisipatif dengan melibatkan dosen dari bidang kesehatan dan manajemen. Tahapan kegiatan meliputi identifikasi kebutuhan masyarakat, edukasi gizi, pelatihan pembuatan NAGUBI, pengemasan produk, pemasaran, pendampingan usaha, serta evaluasi hasil kegiatan. Data dikumpulkan melalui observasi, dokumentasi, diskusi, dan catatan lapangan, kemudian dianalisis secara deskriptif kualitatif. Hasil kegiatan menunjukkan peningkatan pemahaman peserta mengenai nilai gizi daun ubi kayu, keterampilan mengolah NAGUBI, serta kemampuan dasar dalam mengelola usaha. Program ini berkontribusi terhadap peningkatan nilai tambah pangan lokal, mendorong kemandirian ekonomi masyarakat, dan memperkuat potensi ekonomi masyarakat pesisir secara berkelanjutan melalui inovasi berbasis sumber daya lokal.

INTRODUCTION

The utilization of local food resources has become one of the strategic approaches to strengthening food security, improving community nutrition, and promoting sustainable local economic development (FAO, 2023; United Nations, 2015). Increasing public awareness of healthy dietary patterns has encouraged the development of innovative food products derived from locally available agricultural commodities (WHO, 2021). In Indonesia, various indigenous food resources possess considerable nutritional and economic potential; however, many remain underutilized and are commonly consumed in traditional forms without further value-added processing (FAO, 2023; Widyastuti et al.2024). Transforming these resources into innovative food products represents an important strategy for supporting community empowerment and strengthening the competitiveness of local economies (Mardikanto & Soebiato, 2020)

Cassava (*Manihot esculenta* Crantz) is one of Indonesia's major food crops, and its leaves contain abundant nutritional components, including dietary fiber, plant-based protein, vitamins A and C, calcium, iron, and various antioxidant compounds (Montagnac et al., 2009; Latif & Muller, 2015). Previous studies have demonstrated that cassava leaves have the potential to serve as functional food ingredients because of their nutritional composition and health-promoting properties (Latif & Muller, 2015). Nevertheless, in many rural communities, cassava leaves are still primarily utilized as boiled vegetables or traditional side dishes, resulting in relatively low economic value despite their high nutritional potential (Mus et al., 2023; Umam, 2024).

Boneatiro Barat District, Buton Regency, is a coastal area where cassava plants are widely cultivated in household gardens and small-scale agricultural land. The availability of cassava leaves throughout the year provides significant opportunities for developing local food products that support household food security while creating new economic opportunities for the community (Kementrian Pertanian Republik Indonesia, 2022). However, preliminary observations conducted during the community service program revealed that local residents had limited knowledge regarding product diversification, food processing technology, nutritional value enhancement, product packaging, business management, and marketing strategies. Consequently, cassava leaves have not yet been optimally transformed into innovative products with higher market value.

To address these challenges, the community service team introduced NAGUBI (Cassava Leaf Nuggets) as an innovative functional food product developed from cassava leaves. Unlike conventional vegetable preparations, NAGUBI combines cassava leaves

with complementary nutritious ingredients and applies modern food-processing techniques to produce an attractive, practical, and nutritious food product suitable for various consumer groups. This innovation not only increases the added value of local agricultural resources but also encourages healthier dietary practices among coastal communities.

The implementation of this program was designed through a multidisciplinary collaboration involving lecturers from the Management and Health Sciences disciplines. The health team contributed by providing nutrition education, food safety awareness, and practical training in hygienic food processing, while the management team focused on entrepreneurship development, simple financial management, product branding, packaging improvement, and marketing strategies. Such interdisciplinary collaboration is considered essential because sustainable community empowerment requires not only improvements in food quality but also the development of entrepreneurial competencies that enable communities to commercialize innovative products effectively (Yunus, 2010).

Furthermore, this community service initiative aligns with the principles of Blue Management, which emphasize sustainable utilization of local resources through innovation, efficiency, community participation, and long-term economic resilience (Pauli, 2010). Rather than exploiting natural resources, the Blue Management approach encourages communities to create higher economic value from existing local resources while maintaining environmental sustainability and improving social welfare. Within this framework, cassava leaves are transformed from a low-value agricultural commodity into a marketable functional food product capable of supporting coastal community livelihoods.

Previous community service and research activities have highlighted the importance of food diversification, nutrition education, and entrepreneurship development in improving community welfare (FAO, 2023; WHO, 2020). Nevertheless, most existing programs have implemented these interventions separately. Few initiatives have integrated nutrition education and entrepreneurship strengthening into a single multidisciplinary community empowerment model centered on local food innovation. Therefore, the present community service program offers a more comprehensive approach by combining health promotion with business capacity development through the production of NAGUBI.

This article aims to describe the implementation of a multidisciplinary community service model integrating nutrition education and entrepreneurship development through the innovation of NAGUBI (Cassava Leaf Nuggets) to empower coastal communities in Boneatiro Barat District, Buton Regency. The program is expected to improve community knowledge and practical skills in healthy food processing while creating opportunities for sustainable local entrepreneurship based on indigenous food resources.

METHOD

This community service program employed a participatory community empowerment approach, which actively involved community members throughout the planning, implementation, and evaluation stages. The approach was selected to encourage active participation and improve participants' knowledge and practical skills in processing local food resources into innovative products while strengthening entrepreneurial capacity.

The program was conducted in Boneatiro Barat District, Buton Regency, Southeast Sulawesi, Indonesia, a coastal area with abundant cassava plants but limited utilization of cassava leaves as value-added food products. The target participants consisted of housewives, micro and small business actors (MSMEs), youth representatives, and community members who expressed interest in developing local food products and home-based entrepreneurship. Participants were selected purposively based on their willingness to participate in all stages of the community service activities.

The implementation of the program consisted of four sequential stages. The first stage involved field observation and needs assessment to identify local resources, community potential, and existing problems related to food diversification and entrepreneurship. The second stage consisted of nutrition education, delivered by lecturers from the health discipline, focusing on the nutritional value of cassava leaves, food safety, hygienic food processing, and healthy dietary practices. The third stage involved hands-on training in producing NAGUBI (Cassava Leaf Nuggets), during which participants directly practiced the preparation, processing, and presentation of the product using locally available ingredients. The fourth stage comprised entrepreneurship strengthening, facilitated by lecturers from the management discipline, covering basic financial management, cost calculation, pricing strategies, branding, packaging, and product marketing to improve participants' business capacity.

Data were collected through direct observation, documentation, participant discussions, and field notes during all stages of the community service activities. These techniques were used to document participant engagement, learning processes, and program implementation. The collected data were analyzed using descriptive qualitative analysis, focusing on describing the implementation process, participant responses, knowledge improvement, skill development, and the outcomes of integrating nutrition education with entrepreneurship strengthening in developing NAGUBI as an innovative local food product.

RESULTS AND DISCUSSION

Initial Community Conditions and Identification of Local Potential

The initial observation conducted in Boneatiro Barat District revealed that cassava leaves are abundantly available as one of the local agricultural commodities. Most households cultivate cassava plants in their home gardens or surrounding agricultural land. Despite their availability, cassava leaves have traditionally been consumed only as boiled vegetables or simple side dishes, resulting in limited economic value and minimal product diversification.

Field discussions with community members indicated that most participants had limited knowledge regarding the nutritional value of cassava leaves, food diversification, hygienic food processing, product packaging, and entrepreneurship. In addition, local residents had never received practical training on transforming cassava leaves into value-added food products with commercial potential. This condition demonstrates that the abundant local resources had not yet been utilized optimally to improve household income.

From the perspective of community empowerment, this situation represents an opportunity to integrate local resource utilization with capacity building through education, practical training, and entrepreneurship development. Such an approach is consistent with community empowerment theory, which emphasizes strengthening community capacity by utilizing locally available resources to create sustainable economic opportunities.

Implementation of Nutrition Education Activities

The first stage of the community service program focused on improving participants' knowledge through nutrition education. The educational session introduced the nutritional composition of cassava leaves, including dietary fiber, plant protein,

vitamins, minerals, and antioxidants, as well as their health benefits. Participants also received information regarding hygienic food handling, food safety, and balanced nutrition principles. The educational activities were delivered interactively through presentations and discussions, allowing participants to actively ask questions and share their experiences regarding the traditional utilization of cassava leaves. **Figure 2** presents the implementation of the nutrition education session conducted during the program.



The high level of participant interaction during the educational session indicates that community members were enthusiastic about obtaining new knowledge related to healthy local food products. Similar findings have been reported in previous studies indicating that nutrition education significantly contributes to improving community awareness regarding healthy dietary practices and food diversification.

Practical Training on NAGUBI Production

Following the educational session, participants attended hands-on training on producing NAGUBI (Cassava Leaf Nuggets). During this stage, participants directly practiced every production step, including selecting fresh cassava leaves, preparing ingredients, mixing the dough, steaming, cutting, coating, frying, and presenting the final product. The learning-by-doing approach enabled participants to gain practical skills rather than merely receiving theoretical information. Active participation was observed throughout the production process, as participants worked collaboratively under the guidance of lecturers from the health and management disciplines. The practical training also emphasized hygienic processing techniques to ensure food safety while maintaining product quality.

Figure 3 illustrates participants practicing the preparation of NAGUBI.



Meanwhile, **Figure 4** presents the intermediate processing stage before frying.



The final product produced during the training is shown in **Figure 5**.



Compared with conventional cassava leaf dishes, NAGUBI offers greater added value because it combines nutritional benefits with an attractive appearance, longer shelf-life potential, and broader market acceptance.

Entrepreneurship Strengthening through Multidisciplinary Collaboration

One distinguishing feature of this community service program was the integration of health science and management science within a single community empowerment model. While the health discipline focused on nutrition education, food safety, and processing techniques, the management discipline emphasized entrepreneurship development by introducing participants to basic financial management, simple cost calculation, pricing strategies, branding, packaging, and product marketing. This interdisciplinary approach enabled participants not only to produce healthier food products but also to recognize NAGUBI as a potential business opportunity capable of increasing household income. The integration of multidisciplinary expertise reflects the concept of sustainable community empowerment, in which improvements in public health are accompanied by increased economic capacity. Previous studies have shown that combining food innovation with entrepreneurship education contributes significantly to improving community welfare and business sustainability.

Multidisciplinary Collaboration Model for Coastal Community Empowerment

One of the major outcomes of this community service program is the development of a Multidisciplinary Collaboration Model integrating nutrition education and entrepreneurship strengthening through local food innovation. The model consists of five interconnected stages: Identification of local potential., Nutrition education, Practical production training, Entrepreneurship strengthening, Community empowerment.

Figure 6 illustrates the proposed multidisciplinary collaboration model.



Unlike many community service programs that focus solely on technical training, this model emphasizes simultaneous improvements in health knowledge, food innovation skills, and entrepreneurial capacity. Consequently, participants are expected to become more independent in developing sustainable home-based food businesses utilizing locally available resources.

Community Service Outcomes and Implications

The implementation of the program resulted in several positive outcomes. Participants demonstrated increased understanding of the nutritional benefits of cassava leaves, improved skills in producing NAGUBI, and greater awareness of entrepreneurship opportunities based on local food resources. The community also showed strong interest in further developing NAGUBI as a local food product with commercial potential. Discussions during the evaluation stage revealed participants' willingness to continue producing the product for household consumption as well as for small-scale business development. From a broader perspective, this community service program contributes to achieving sustainable community empowerment by integrating health promotion with local economic development. The multidisciplinary collaboration model developed in this program may serve as a practical reference for future community empowerment initiatives in other coastal regions with similar local resource potential.

CONCLUSION

This community service program demonstrates that integrating nutrition education and entrepreneurship strengthening through the development of NAGUBI (Cassava Leaf Nuggets) provides an effective multidisciplinary approach to empowering coastal communities in Boneatiro Barat District, Buton Regency. The program successfully improved participants' knowledge of the nutritional benefits of cassava leaves, enhanced their practical skills in processing innovative local food products, and increased their awareness of entrepreneurship opportunities based on local resources.

The collaboration between the health and management disciplines contributed not only to the production of a nutritious and value-added food product but also to strengthening participants' entrepreneurial capacity through training in basic financial management, product branding, packaging, and marketing strategies. This integrated approach transformed cassava leaves, which were previously utilized only as traditional vegetables, into an innovative product with greater commercial potential.

From an economic and business perspective, the development of NAGUBI creates opportunities for household-based entrepreneurship, increases the economic value of local agricultural resources, and supports the growth of community-based creative industries. Furthermore, the Multidisciplinary Collaboration Model developed through this program offers a practical framework for integrating health promotion with entrepreneurship development, which can be adapted and implemented in other coastal communities possessing similar local resource potential. Therefore, this program contributes not only to improving community welfare but also to promoting sustainable local economic development through innovation and community empowerment.

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