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Community Service: Tea from Sukun Leaves as a Traditional Beverage with a Modern Approach

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ABSTRACT

This community service activity aims to introduce and develop the potential of sukun (breadfruit) as a raw material for tea production, emphasising the aspects of health, economy, and cultural preservation. Sukun, which has long been known as a traditional food plant, has various benefits that are not widely acknowledged, especially in the form of tea. The program involved the local community in training focused on processing sukun into high-value tea products. In addition, education was provided on packaging and marketing techniques, to enhance the competitiveness of sukun tea products in modern markets. The results of this activity show an increase in community awareness regarding the economic value of sukun, as well as the development of innovative and high-quality sukun tea products, which can be an alternative healthy beverage and support local economic sustainability. Through an integrative approach, this program succeeded in exploring local potential and combining it with modern innovation, thereby revitalizing traditional culinary heritage in a form that aligns with today's needs.
Keywords: *Sukun Leaf Processing, Tea, Innovation, Community Service*

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INTRODUCTION

Indonesia is known for its biological richness and traditional culinary diversity. One natural potential that has not been fully utilized is breadfruit (Artocarpus Altiris), which has been known more as an alternative food source than as a raw material for beverages (Eko et al., 2024). Sukun, which is easily found in various tropical regions, has great potential as a basic ingredient for tea making. Tea from sukun is an innovation that not only offers a unique flavor, but also brings various health benefits (Gina et al., 2024). Tea, which has been an integral part of the drinking culture in many countries, including Indonesia, is now gaining more attention in new healthier and natural forms. As people's awareness of the importance of a healthy lifestyle increases, so does the need for natural and beneficial beverage products. Tea from sukun comes as an answer to this trend, combining tradition with modern innovation (Putro, 2024).

Picture 1. Various Sukun Leaf Wastes in Kapota Village, Southeast Sulawesi

The problem of breadfruit (Artocarpus altilis) leaf waste has become an environmental issue in many areas with breadfruit trees. Breadfruit leaves, which fall in abundance especially in autumn, are often ignored and piled up on land or burned, potentially polluting the environment.(Rasyadi, 2018) Fallen breadfruit leaves that are left to accumulate can cause decay that produces an unpleasant odour, while disturbing the aesthetics of the environment. In addition, the accumulation of leaves can inhibit the growth of grass and small plants in the vicinity. Some people choose to burn breadfruit leaves to get rid of them.(Fiana et al., 2020) However, burning produces carbon dioxide gas and pollutant particles that pollute the air, thus contributing to health problems and climate change. Many people do not know the potential of breadfruit leaves as raw materials for high-value products. As a result, breadfruit leaves are considered as waste that has no use value, whereas if processed properly, this waste can be utilised.

How to Utilise Breadfruit Leaves as Herbal Medicine: Traditionally, breadfruit leaves are known to have health benefits, such as treating high blood pressure, diabetes, and gout. Breadfruit leaf extract, which is rich in flavonoid and tannin compounds, can be processed into herbal medicine.(Karunita et al., 2021) The process involves drying the leaves, extracting the active ingredients, and packaging the product into capsules, herbal tea, or liquid extract.(Betania, 2021) Breadfruit leaf waste can be utilised in a variety of ways that have a positive environmental and economic impact on the community. Organic fertiliser, animal feed, herbal medicine, crafts, and biopesticides are some of the ways to turn breadfruit leaves that were once considered waste into useful products.(Firdausi, 2020) Support from the government, academia, and community awareness are key to maximising this potential, which will ultimately reduce the negative impact of breadfruit leaf waste on the environment (Salim et al., 2024).

The development of tea from sukun not only enriches the variety of traditional beverage products, but also has the potential to provide added value to the local communities that process it. With the utilization of simple technology and a creative approach, sukun tea can be mass-produced and marketed more widely, both in local and international markets (Nurfitri et al., 2023).

Innovation in the processing of sukun leaf waste into value-added beverage products, and very efficacious for health, such as sukun leaf tea, is an effective strategy to increase community income while introducing a variety of local beverage products to consumers. Sukun leaf tea has advantages in terms of flavor, texture, and high nutritional content, making it a potential product to be developed commercially (Aditya et al., 2024).

The problem of breadfruit leaf waste is often overlooked, even though breadfruit leaves fall naturally in large quantities in areas where there are many breadfruit trees, such as in plantations and tropical villages.(Salim et al., 2024) This waste causes several problems, among others Piling up of Organic Waste in the form of untreated breadfruit leaves, disturbing the cleanliness and beauty of the environment. If left to rot, it can cause unpleasant odours and invite pests.(Riyanto et al., 2023) Burning of Breadfruit Leaves due to Burning breadfruit leaf waste is often used as a quick disposal method, but this produces air pollution and smoke that is harmful to health and contributes to carbon emissions that damage the environment (Herhawa et al., 2023). Lack of Utilisation results in breadfruit leaves that actually have the potential to be utilised into various kinds for example as compost material or raw material for herbal products. However, the lack of knowledge and processing technology makes this waste less optimally utilised. Breadfruit leaf waste can also be a pollution for soil and water If not managed properly, decaying leaves can release certain substances that can pollute the surrounding soil and water.(Hesti et al., 2024) Overcoming this problem therefore requires community awareness and the development of simple technology to process breadfruit leaves into valuable products, such as compost or herbal ingredients. This can help reduce waste and create new economic value for the community (Astuti et al., 2018).

To solve these problems researchers together with various parties, including local governments and community organizations, took the initiative to carry out a community service program. This program aims to increase community awareness and skills in utilizing sukun leaf waste into economically valuable products. The involvement of various parties is important to ensure that community service programs are effective and sustainable, and can provide long-term benefits to local communities (Muhammad et al., 2024).

Picture 2. Introduction to Sukun Leaf Waste in Kapota Village, Southeast Sulawesi

The service activities include socialization and technical training on sukun leaf processing focused on small and medium enterprise (SME) groups and local communities involved in the herbal beverage industry. The training not only covers basic sukun leaf processing techniques, but also aspects of product design and marketing strategies. This holistic approach is expected to help local communities develop new relevant skills and increase the added value of the products produced (Suwarno, 2024).

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The main objective of this service is to explore the process of processing sukun leaves into tea, starting from the selection of raw materials, processing methods, to proper marketing techniques. Other than that this research will also discuss the challenges and opportunities in the development of sukun leaf tea herbal beverage products in local and international market. With the utilization of appropriate and innovative processing technology, it is hoped that sukun leaf tea can become a superior product that not only improves the welfare of coastal communities, but also strengthens Indonesia's position as the world's leading producer of sukun leaf tea (Agustina et al., 2024).

METHODS

The approach used in this service is participatory by actively involving the local community in every stage of the activity (Fahruddin et al., 2024). This direct involvement is important to ensure that the knowledge and skills acquired are aligned with local needs and potential. The program began with a socialization session to raise awareness of the importance of sukun leaf waste management and its economic potential (Picture 4). This socialization was followed by technical training that focused on processing sukun leaves into a variety of products such as herbal beverages, tea, and food items derived from sukun leaves.

The primary objective here to develop the most effective method for processing sukun leaves into high-quality tea. This includes several stages in the production process, such as drying, fermentation and serving techniques. The aim is to ensure that the final product has optimal nutritional value, flavor and quality, making it suitable for marketing and consumption (Adnan et al., 2024). This analysis focuses on the impact of sukun leaf tea production on the local economy (Bekele Sime et al., 2024) This includes market analysis to understand the demand, the prospects of selling the tea products, as well as how the community's income can be increased through this initiative. The aim is to demonstrate that sukun leaf

tea production can serve as a sustainable source of income for the community (Moreno-Miranda & Dries, 2022).

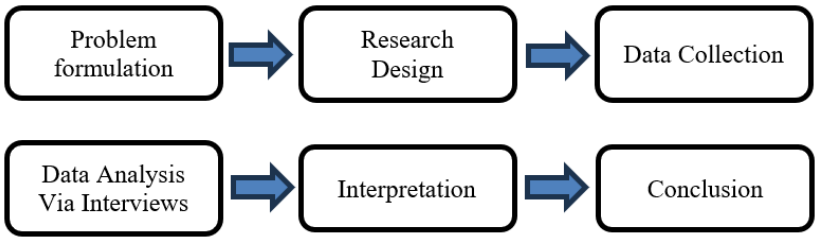
This section highlights the importance of education and campaigns aimed at enhancing community awareness of the health benefits associated with sukun leaf tea. It is essential to develop effective strategies for disseminating this information, thereby encouraging individuals to explore and incorporate the tea into their healthy lifestyles. The last section focuses on how the sukun leaf tea-making business can continue to grow and be sustainable in the long term (Quoc & Van, 2023).

This includes sustainable natural resource management, effective marketing strategies, and product innovation to ensure the business remains relevant and can withstand market challenges. Overall, this problem statement aims to identify the necessary steps for establishing a sukun leaf tea industry that not only produces high-quality products, but also has a positive impact on society and the environment in a sustainable manner (Voge et al., 2023).

Research Design is the initial stage where the researcher plans and designs the entire study. The research design includes the selection of research methods, development of hypotheses or research questions, sample selection, and planning of data collection procedures. The aim is to ensure the research is conducted in a systematic and structured manner, so that the results are reliable (De Keyser et al., 2023).

Data collection is done by collecting the data needed for the research. In this context, data collection will primarily be conducted through interviews with selected respondents. These interviews aim to obtain in-depth information and perspectives from participants related to the research topic.

Data analysis, following the collection of data through interviews, involves the analysis of the gathered information (Petrescu-Mag et al., 2024). Data analysis usually involves identifying themes, patterns, or categories in the answers given by participants. The researcher looks for meaning behind the answers to answer the research questions or test the hypotheses that have been formulated. Overall, this flow illustrates a structured qualitative research process, starting from research planning, data collection through interviews, to data analysis that aims to draw in-depth conclusions from the data collected (Allasiw et al., 2023).



Picture 3. Mind Mapping of Research

The training activities were divided into several sessions, each focusing on a different aspect of the production process. The initial session included an introduction to tools and materials, along with foundational sukun leaf processing techniques. The next session covers product design, during which participants

were instructed on creating both visually appealing and functional products (Gyal, 2024). The last stage is marketing strategy, during which participants receive guidance on how to effectively market their products through both local and online channels. All training sessions are guided by instructors who are experienced in their fields, and participants are given the opportunity for hands-on practice (Putro, 2024).

Evaluation of the activities was conducted on an ongoing basis to assess the effectiveness and impact of this service. The evaluation is conducted through surveys and interviews with participants, as well as direct observation of the products produced. The evaluation criteria include improvement in technical skills, quality of products produced, and changes in participants' income (Gaitán-Cremaschi et al., 2020). The evaluation aims to identify areas for improvement and to ensure that the program is effectively meeting its objectives. This operational approach was selected because it allows for adjustments and improvements to be made to the program based on feedback received, thereby ensuring sustainability and long-term success (Putra & Azhar, 2024).

RESULTS AND DISCUSSION

The community service on sukun leaf management in Kapota Village, Southeast Sulawesi, involved a series of activities designed to increase the awareness and skills of the local community. The mentoring process began with a socialisation session aimed at educating the community on the environmental impact of sukun leaf waste and its economic potential. Picture 3 shows researchers and a number of institutions working together to socialise and educate the community on the environmental impact of sukun leaf waste and its economic potential.

Picture 4. Socialization of Trainees

The event attracted many participants, including small and medium-sized enterprises (SMEs) and local community members. The session continued with a technical training component, encompassing an introduction to tools and materials, basic processing techniques, and principles of product design. The active participation of the participants showed a high spirit of learning and a commitment to the initiative focused on the management of herbal beverages made from sukun leaves.

Picture 5. Participants Design a Product

During production session, participants were given the opportunity to apply their newly acquired skills under the direct guidance of the instructor (Picture 4). The resulting product, herbal tea made from sukun leaves, showed an improvement in both the quality and creativity among the participants (Picture 5).

Picture 6. Various Sukun Leaf Waste Products into Herbal Beverages

The final stage focused on marketing strategy, during which participants were provided with comprehensive knowledge related to various distribution channels and marketing techniques, applicable in both local and online contexts. (Picture 6).

Picture 7. Testimonials of Sukun Leaf Tea Orders

This activity not only enhanced participants' understanding of the importance of marketing, but also introduced them to digital platforms that can broaden their market reach. The mentoring provided practical insights into business management, encompassing all stages from production to marketing, which are important for the sustainability of their business. (Prayetno et al., 2024). Furthermore, this initiative has also led to significant social change, fostering increased awareness within the community regarding the importance of sukun leaf management and the economic opportunities it can generate. This aligns with recent literature findings that community-based empowerment programs can effectively drive behavior change and enhance participation in environmental conservation efforts.

In addition, the formation of a new working group in the form of a local co-operative that focuses on the production and marketing of herbal tea products from sukun leaves, shows the emergence of new institutions that serve as a forum for collaboration and innovation (Syarif, 2024). Behavioural changes were also seen

in the form of increased community participation in activities related to sukun leaf waste management and herbal beverages production. Participants showed greater interest in learning and innovation and were more open to new ideas regarding sustainability and the circular economy. These changes reflect an enhanced understanding of the importance of environmental sustainability and the economic potential of sukun leaves, which may serve as a foundation for broader social transformation.

Picture 8. Product Exhibition Attended by Various Agencies

The emergence of local leaders who are proactive in organizing and leading this initiative is one of the significant outcomes of this service (Agustina et al., 2024). These local leaders play a crucial role not only in fostering community participation but also in ensuring the sustainability of the program. Their involvement aligns with recent research findings that emphasize the importance of local leadership in the success of community empowerment program (Fallis, 2024). With strong institutional support and engaged local leaders, the community of Kapota Village in Southeast Sulawesi is now well-positioned to further develop and expand this initiative in the future.

Evaluation of Service Activities

The evaluation of this program was conducted using two primary methods: surveys and interviews with participants, in addition to direct observation of the products produced. The interviews indicated that participants had gained a deeper understanding of the production process, from the initial stages to marketing. They were able to identify the important steps involved in transforming raw materials into finished products with economic value. Direct observation of the resulting products showed innovation, as participants successfully transformed waste into marketable goods. This reflects an enhancement in both creativity and technical skills.

Table 1. Evaluation of Service Activities

Evaluation Aspects	Description
Evaluation Methods	◦ Surveys and interviews with participants: Understanding production process from inception to marketing. ◦ Direct observation of the product: Seeing its innovation from an undervalued material into an economic good.

Technical Skills Enhancement:

Evaluation Criteria	◦ Definition of production process: From raw material selection to the final stage. ◦ Product design: Products that match the market trends.
	Product quality:
	◦ Assessment of marketable products: Analyze which products are attractive to consumers.
	Change in income
	◦ Assessment of marketable products
Purpose of evaluation	
	◦ Identify areas that need improvement. ◦ Ensure the program is running as intended.
An Operational Approach for Evaluation	
	◦ Adjust and improve the program based on feedback. ◦ Support the sustainability and long-term success of the of the program.

The evaluation criteria covered several important aspects, including the improvement of participants' technical skills. After attending the program, participants have a better understanding of the production process, from the selection of raw materials, product design that suits market trends, to effective and efficient sales strategies. Product quality is also a major focus of the evaluation, where the produced items are assessed based on their market acceptance. This includes analyzing which products successfully attract consumer interest and achieve good sales.

Furthermore, the evaluation assessed the program's impact on participants' income. Although the recorded increase in income is still relatively small, it reflects a positive trend that has the potential for further enhancement. The main objective of the evaluation was to identify areas for improvement and to ensure that the program is aligned with its stated objectives. This comprehensive evaluation approach allows for continuous adjustment and improvement, thereby supporting both the sustainability and long-term success of the program. It therefore serves as an important tool to ensure that the program delivers maximum benefit to participants.

CONCLUSION

The results of this service activity showed a significant increase in the skills and understanding of the community in Kapota Village, Southeast Sulawesi, regarding the management of sukun leaf waste. The community not only succeeded in processing sukun leaves into value-added products, but also managed to increase income through the sale of these processed products. This achievement creates an effective circular economy model, wherein previously undervalued food materials are transformed into market-demanded products. This success highlights the potential of community-based approaches in addressing local environmental and economic challenges, making waste management as a solution that can be adopted in other regions with similar conditions.

However, despite the positive results, there are several limitations that need to be considered. First, the scale of the program is still limited to a specific area in Kapota Village, Southeast Sulawesi, resulting in a limited impact. Second, limited resources and technological support limit further innovation and the development of more diverse products. Additionally, the income increases experienced by participants are still relatively small, indicating that there is substantial potential for improvement in both production scale and market access.

One of the unique features of this service is its approach, which emphasizes the direct involvement of the community at every stage of the process, from production to marketing. This not only improves the technical skills of the community, but also gives a deeper understanding of the circular economy and the importance of sukun leaf waste management. It is recommended that relevant agencies and future researchers expand the reach of this program to other areas and increase support in terms of additional training and access to more advanced technology. Furthermore, it is important to establish a broader marketing network to ensure that processed sukun leaf products can reach a wider market, thereby providing greater economic benefits to the community.

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