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Family Welfare Empowerment (PKK) of Ban Village Karangasem through Product Development Based on Roselle and Mangoes

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ABSTRACT

Community empowerment through the development of roselle and mango-based food products in Ban Village, Karangasem, Bali, aims to enhance community independence and welfare by developing roselle and mango-based food products in Ban Village, Karangasem, Bali. The focus is on effective food processing, fostering entrepreneurial spirit, and providing training in product diversification and marketing. Collaboration with universities and networks supports sustainable development, increases the economic value of local agricultural products, opens new market opportunities, and encourages sustainable ecotourism while preserving local wisdom in Ban Village. The initiative involves 15 members of the Ban Village PKK group, established in 2010. The implementation method is structured and includes coaching, training, mentoring, and consultation to address various challenges in adding value for partners. Community service activities are conducted through lectures, discussions, demonstrations, training sessions, and Q&A. As a result, the community empowerment activities significantly increased the knowledge and skills of PKK members in processing and marketing roselle and mango products, such as roselle tea and mango dodol, thereby creating new sources of income. Despite the progress, most participants require further training in packaging and product variety. Diversification efforts have increased the economic value of local agricultural products, providing stable profits for farmers.

1. INTRODUCTION

1.1 Research Background

Innovative food products are products that are growing rapidly producing a variety of processed products that are

Effective and efficient processing of these products aligns with the concept of clean production to support ecotourism. Food processing aimed at empowering village communities contributes to developing community independence and welfare. Prioritizing community needs in enhancing knowledge, skills, and awareness in resource utilization through programs, activities, and mentoring is essential, following RO Law Number 6 of 2014 [1]. Village development efforts focus on improving the quality of life and livelihood of village communities.

Ban Village is a village located in Kubu District, Karangasem Regency. Most of the people's livelihoods as farmers, breeders, and coffee processors have the potential to be developed. The population is 11,858 people, 6,184 males and 5,674 females. Ban Village has an area of 7,095 hectares with all (100%) land/land in this village being dry land. The total area of Ban Village is divided into a residential area of 106,446 hectares and a community plantation area of 6,962.85 hectares.

The location and boundaries of Ban Village are west of Central Tianyar Village, east of Sukadana Village, north of East Tianyar Village, and south of the Protected Forest of Kintamani District. Ban Village is classified as a village located in a mountainous area that has a rainfall of 2,138 mm and an altitude of 500 meters above sea level. The distance from Ban Village to the sub-district capital is ±20 km and to the Regency Capital is ±49 km which can be reached ±60 minutes from the center of Karangasem. Ban Village oversees 16 hamlets, namely: Bukit, Ban, Panek, Cucut, Bonyoh, Temakung, Darmaji, Cegi, Pucang, Dlundungan, Daya, Jatutuhu, Bunga, Pengalusan, Manikaji, and Belong.

Behind the shortcomings in terms of the condition of the land owned, Ban Village has a variety of natural potentials that need to be developed both from the agriculture, livestock, fisheries, and crop processing sectors. The location of the village is indeed a bit far from the crowd, so community activities are only involved around the area. Various superior food products produced by the community in Ban Village include Sugar Lontar, Cashew Beans, Soroh Coffee, Siwalan, Roselle, Mango, Balinese Cow, Goat, Balinese Chicken, Pork, and Capture Fisheries. All potentials in Ban Village need to be developed with mentoring that involves several active groups to improve their knowledge, skills and independence, such as the group of women food processors.

As a university, Warmadewa University, in collaboration with Universiti Teknologi MARA (UiTM) in Malaysia, Andalas University, and the SAFE Network, sees this condition as both an opportunity and a challenge to establish more intensive and sustainable cooperation over the next three years. Traditionally, most universities have focused more on theoretical science and technology development, with limited emphasis on practical applications. As a result, the contributions of scientific research have not fully benefitted the wider community. Through community service activities funded by Warmadewa University, it is hoped that partners in Ban Village will gain skills, entrepreneurial spirit, and insights into managing local natural resources. This initiative aims to open business opportunities, add value, and enhance the independence and welfare of the community.

Ban Village has the Ban Village PKK, the location of this group is far from the crowd and is still somewhat behind in terms of skills. The activities carried out by the group range from training in making processed food products, ceremonial ingredients and others. This group still urgently needs support so that community empowerment can foster an entrepreneurial spirit and needs assistance so that members have supporting activities that can help increase family income so that the welfare of the community increases.

These skills will later be used to meet the needs of the family and the desire to develop their business independently. This desire is supported by the proximity of the market in Kubu district, which is known for its Amed ecotourism. The island of Bali is not only rich in cultural arts but also in a variety of processed foods. Many of the typical Balinese snacks are favored by foreign and local tourists. Processed foods have their appeal in their unique shape and taste [2][3]. Ecotourism is a form of tourism that focuses on environmental conservation and the welfare of local communities. Ban Village has great potential as an ecotourism destination due to its pristine natural beauty and biodiversity. The development of ecotourism in this village can promote local economic growth while preserving the existing natural environment [4].

Marketing local products requires the right strategy to compete in a wider market. According to [5], an effective marketing strategy includes market analysis, segmentation, targeting, and positioning. By understanding the market in depth, local product manufacturers can determine the most potential market segments and design appropriate strategies to achieve those segments. In the context of local products such as rosé tea and mango dodol, marketing strategies that involve branding, attractive packaging, and the use of social media can increase market reach and consumer interest [6].

Roselle (*Hibiscus sabdariffa*) is known to have many health and nutritional benefits, including high levels of antioxidants and vitamin C [7]. Appropriate processing techniques, such as drying and heating, can help maintain the nutritional quality of these ingredients and extend their shelf life. For example, drying roselle can produce a tea that is rich in antioxidants and has a long shelf life, allowing the product to be enjoyed for longer [8]. Mango (*Mangifera indica*), on the other hand, also has many nutritional benefits, including high levels of vitamin A, vitamin C, and fiber [9]. Mango processing with the right technology, such as drying or heating, can produce a variety of processed products such as mango dodol and dried mangoes. This technology preserves the nutritional quality of the mango, increases its added value, and extends the shelf life of the product. For example, mango dodol processed with proper heating has a good texture and can be kept longer without losing its flavor quality.

Maintaining processed products made from roses and mangoes is the duty and responsibility of all parties in reducing or suppressing poverty. Processing Products Roselle and Mango have better prospects and development opportunities. In the food processing process, the type, and quality of raw materials and auxiliary materials vary greatly. Conventional food product technology is characterized by an image where products are processed with poor levels of sanitation and hygiene, usage of raw materials with low levels of quality or freshness, food safety which is not guaranteed, technology that is used from generation to generation, and businesses that are managed by families with inadequate levels of management ability [10]. Therefore, it is necessary to develop food processing with several improvement efforts by applying basic feasibility to processing [11]. The quality aspect needs to be studied also the development of product marketing [12]. With the problem of various processing processes of roselle and mango, it is necessary to implement basic feasibility to produce quality processed roselle and mango food with wide marketing [13]. Sanitation and hygiene are important aspects of food processing to ensure safe and high-quality products. The implementation of good sanitation practices can prevent contamination and extend the shelf life of products. Hygiene in the production process is key to avoiding the health risks that can be posed by unhygienic food products [14].

The Family Welfare Program (PKK) of Ban Village was formed in 2010 with a total of 20 members. The group's activities are to process roselle only by ordinary drying and mangoes that are processed in hours with ordinary plastic packaging without any efforts to maintain quality and extend the shelf life. This group did not know about making good rosella tea and mango dodol, nor did they know marketing strategies. The community service activities are funded by the Community Service Institute of Warmadewa University, The group hopes that they will have the skills and insight to manage natural resources that support ecotourism and maintain local wisdom and have an entrepreneurial spirit so that they will be able to increase independence to open wider business and marketing opportunities. Training activities on processing roselle and mango-based products, it is hoped that the group will be able to produce and market processed roselle and mango products so that quality can be maintained, shelf life is longer and marketing is wider. Partners are also provided with knowledge about sustainable ecotourism development. The training activities for processing processed roselle and mango products are expected to be able to produce and market their processed products more widely with better marketing, thereby being able to independently increase their family income and welfare [15][16][17].

Community empowerment is the process by which communities, especially marginalized groups, gain the power and ability to control their lives and the surrounding environment [18]. Through empowerment, people can improve their quality of life, both in terms of economy, society, and culture, so that they can contribute more to the development of their regions. The PKK is one of the organizations that plays an important role in community empowerment, especially in rural areas. PKK focuses on improving family welfare through various initiatives, such as education, skills training, and small business development [19]. With these programs, PKK strives to empower families to be more independent and able to play an active role in the development of their communities.

1.1. Literature Reviews

1.2.1 Roselle

Roselle flower (*Hibiscus sabdariffa* L.), also known as roselle, is a plant originating from West Africa and has spread to various parts of the world, including Indonesia. This plant is known for its red flower petals and is rich in various important nutrients. Roselle flower petals contain compounds such as anthocyanins, ascorbic acid (vitamin C), malic acid, and flavonoids. Anthocyanin is a red pigment with high antioxidant properties which is useful for fighting free radicals in the body. Apart from that, roselle also contains minerals such as calcium, magnesium and potassium, as well as vitamins A and B. The health benefits of roselle are very diverse, including being a strong antioxidant, helping to reduce high blood pressure (antihypertension), and having antibacterial and antiviral properties. Some studies also show that roselle can help in weight management by reducing fat absorption and increasing metabolism. Because of its many benefits, roselle flower petals are often processed into various food products such as tea, syrup, jam, dodol, and fermented drinks. The drying process is one of the methods commonly used to preserve roselle petals, so that processed roselle products not only have a distinctive taste but also offer high health benefits.

1.2.2 Mangoes

Mango (*Mangifera indica* L.) is a tropical fruit that is very popular throughout the world, including in Indonesia. This fruit is known for its sweet taste and soft texture, as well as its high nutritional content. Mangoes are rich in vitamin C, vitamin A, and vitamin E, as well as important minerals such as potassium and magnesium. Apart from that, mangoes also contain dietary fiber which is good for digestion and phytochemical compounds such as polyphenols and carotenoids which have antioxidant properties. The health benefits of mango are very diverse. The high vitamin C in mangoes helps boost the immune system and plays an important role in collagen synthesis, which is important for healthy skin. Vitamin A contained in mangoes is beneficial for eye health and immune function. In addition, antioxidant compounds such as polyphenols and carotenoids help fight free radicals and prevent cell damage, thereby reducing the risk of chronic diseases such as cancer and heart disease. The dietary fiber in mangoes also helps maintain digestive health and prevent constipation. In Indonesia, mangoes are widely consumed both in fresh and processed form. Various processed mango products such as juice, jam, dodol and sweets are very popular. The process of processing mangoes into value-added products not only increases the shelf life of the fruit but also provides variety in the way it is consumed. Proper processing technology can also maintain the nutritional content of mangoes so that their health benefits are maintained.

1.2. Research Objective

This program seeks to increase community independence and welfare through effective food processing, fostering an entrepreneurial spirit, and providing product diversification and marketing training. Collaboration with universities and networks aims to achieve sustainable development, increase the economic value of local agricultural products, open new market opportunities, and encourage sustainable ecotourism while preserving local wisdom in Ban Village.

2. METHODS

The implementation method is the pattern or system of actions to be carried out, or the sequence and stages required to carry out community service activities. The implementation methods that will be used include coaching, training, mentoring, and structured consultation regarding various matters that become obstacles in providing added value to partners. The community service activity is implemented through training using lecture and discussion methods, demonstrations, and training, as well as questions and answers.

2.1 Lecture and Discussion Method

The community service activity begins with giving lectures and counseling to group members. These groups of women were gathered in one room with the implementation team to give lectures on the activity material. The material provided is related to the process of processing roselle into tea and mango into dodol. This activity aims to provide theoretical knowledge to group members about the activity material that will be carried out. The activity then continued with the discussion method to deepen respondents' understanding of processed roselle and mango products, a learning medium. During the implementation of this

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activity, more pictures and explanations were displayed regarding the processing of roselle products into tea and mangoes into dodol in the hope that respondents could understand them more quickly.

2.2 Demonstration and Training Methods

Demonstration and training activities are follow-up activities carried out by PKM implementers following the lectures and discussions that have been held. This activity was carried out by demonstrating the process of processing roselle into tea and mango into dodol.

3. RESULTS AND DISCUSSION

3.1 Economics and Social Impact

The implementation of community empowerment activities has had a significant impact on improving the knowledge and skills of PKK members in Ban village in the processing and marketing of Roselle and mango products. Based on the results of the pre-test, all group members need training in the processing and marketing of Roselle Tea and mango dodol products. Before the training, the group members were familiar with some processed roselle and mangoes, but they did not know about attractive packaging and product diversification. In addition, the group was unaware of the economic benefits of processing these roselle and mangoes, which resulted in the ingredients being sold unprocessed.

After implementing the activity, the PKK members of Ban Village were able to independently use roselle and mangoes as innovative processed raw materials. The previous problem of unprocessed ingredients is now solved by processing them into roselle tea and mango dodol, which is attractively packaged. The use of roselle and mangoes as raw materials for this innovative product has become a new source of income for the group. All participants in the training have packaged roselle tea and mango dodol products. Of the 15 participants, 10 people had never calculated the shelf life of roselle or mango. Of the 15 participants, only 5 people had processed roselle and mango into a product. Apart from that, 11 participants already knew that roselle could be made into tea, but 11 participants did not know that mango could be processed into dodol. Most participants do not know how to store and market the products they will produce. Based on this, all participants agreed to provide training regarding the processing of roselle and mango and the marketing of these products.

Figure 1. Dodol Mango and Roselle Tea

Processed food products have significant economic potential, particularly in terms of adding value to local agricultural products. Diversification of agricultural products through processing can increase farmers' incomes and reduce dependence on the sale of raw products [20][21]. This diversification allows farmers to develop a variety of high-value products that can be marketed more widely. Concrete examples of diversification into processed foods include roselle tea and mango dodol. These products not only increase the economic value of rosewood and mango crops but also open up new market opportunities for farmers and processors. By processing agricultural products into consumer goods, farmers can earn higher and more stable profits.

3.2 Partner Contribution to Implementation

The international community-based empowerment activities at Ban Village continued in an orderly and effective manner. Counseling sessions and theoretical studies were conducted to provide an understanding of the material related to the development of products based on roselle (tea) and mangoes (dodol). The event was attended by 15 members of the Ban Village PKK Group. Subsequently, the participants engaged in a practical session involving the preparation of mango dodol, accompanied by a detailed explanation of the material by experts from UiTM and Andalas University.

Partners are provided with ongoing support throughout the product development process until they can produce marketable products. All participants (100%) demonstrated active engagement throughout the activity, expressing their desire for continued assistance in the development of processed roselle and mango products, as well as the expansion of this initiative to include the production of products utilizing other raw materials in the future.

Fig. 2. A series of community service activities were conducted, which aimed to provide an overview of the following: packaging process; roselle, and mango diversification. In addition, the handover of equipment to the PKK group

4 CONCLUSION

The implementation of PKK empowerment activities in Ban Karangasem Village through the development of products based on roselle flowers (tea) and mangoes (dodol) has resulted in a notable positive impact. This program, which was the result of a collaboration between Warmadewa University, Universiti Teknologi Mara (UiTM), SAFE Network, and Andalas University, has led to an improvement in the knowledge and skills of PKK members in processing and marketing of products that were previously under-mastered. As a result of the program, PKK members are now capable to produce quality roselle tea and mango dodol products that are attractively packaged, thus increasing the selling value and income of the community. Furthermore, the program has also strengthened social networks and cooperation among PKK members, as well as supporting the development of ecotourism in Ban Village by making local products parts of tourism promotion.

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