



Community empowerment through snakefruit diversification as fruit leather using a dough machine in the Kramat Bangkalan Village

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ABSTRACT

Kramat Village is one of snakefruit plantation centre in Bangkalan Madura. Some of the processed products are produced into specific typical regional food and can be sold which lead to the improvement of the community's economy. However, in its journey, the snakefruit products are difficult to market outside the region. The purpose of this program is to create a new innovation in processing snakefruit as a culinary product and souvenir typical of Kramat Village Bangkalan. The results of the activity show that innovation in processing snakefruit into fruit leather products is quite popular and has the potential to be a superior product. The development of Kramat Village and its surroundings into a tourist village has made agrotourism actors and snakefruit processors take the initiative to develop processed snakefruit products into culinary delight of the village. However, developing processed snakefruit products into culinary and souvenirs typical of the village is not easy. It requires various kinds of knowledge ranging from processing, packaging to marketing. Empowerment program society is also done in its marketing through mentoring with improvement knowledge in digital marketing field.

Keyword: digital marketing, empowerment, fruit leather, product innovation, snakefruit,

ABSTRAK

Desa Kramat merupakan salah satu pusat perkebunan salak di Bangkalan Madura. Beberapa produk olahan dari salak diproduksi menjadi kuliner khas dan oleh-oleh yang dapat meningkatkan perekonomian masyarakat. Namun dalam perjalanannya produk kuliner khas dan oleh-oleh sulit untuk dipasarkan keluar daerah. Tujuan program ini adalah untuk melakukan inovasi dalam pengolahan buah salak sebagai produk kuliner dan oleh-oleh khas Desa Kramat Bangkalan. Hasil kegiatan menunjukkan bahwa Inovasi pengolahan buah salak menjadi produk fruit leather cukup diminati dan menjadi potensi produk unggulan. Berkembangnya Desa Kramat dan sekitarnya menjadi desa wisata membuat para pelaku agrowisata dan pengolah buah salak berinisiatif untuk mengembangkan produk olahan salak menjadi kuliner dan oleh-oleh khas Desa Wisata Kramat. Namun dalam mengembangkan produk olahan salak menjadi kuliner dan oleh-oleh khas desa tidak mudah. Dibutuhkan berbagai macam pengetahuan mulai dari pengolahan, pengemasan hingga pemasaran. Program pemberdayaan masyarakat juga dilakukan dalam pemasarannya melalui pendampingan dengan peningkatan pengetahuan dalam bidang digital marketing.

Keyword: buah salak, digital marketing, fruit leather, produk inovasi, pemberdayaan,



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1. Introduction

Community empowerment and the capacity of university human resources have a very strong relevance and cannot be separated. Empowerment is a collective action or joint construction and has been implemented by various disciplines. The community empowerment stages through empowerment planning include the

preparation of program plans, locations, themes, time and resource needs. Empowerment planning is a combination of instrumental and communicative rationality and contributes to the development process. The context of the goal is interpreted as an individual's goal orientation in forming group motivation and provide knowledge to university actors [1]. The empowerment strategy is carried out through synergy and convergence of programs in various operational practices that are able to foster community motivation, participation and independence [2]. It is hoped that these four stages of community empowerment will result in sustainable impact evaluation where the community has resilience, independence and community welfare [3].

East Java Veteran National Development University has the duty and responsibility to carry out community service as stated in the Tridharma of Higher Education, which utilizes Science and Technology to advance the welfare of society and improve the intelligence of the nation. In addition, it is explained that community service activities are carried out in various forms of activities in accordance with the academic culture, expertise, and/or scientific autonomy of the community, academics and the socio-cultural conditions of society. The importance of community service as a manifestation of the tridharma of higher education and the involvement of higher education institutions in community empowerment are strategic in achieving the goals of holistic human development and community economic development.

Indonesia is a country rich in natural plant sources both in the highlands and lowlands. Most of them have been widely used by the community as food ingredients with variety processing method. Innovation is important to create diversity and added value to local food.

Snakefruit is one of the native plants of Indonesia that spreading to the Philippines, Malaysia, Brunei, and Thailand through traders. In some areas, this plant grows according to the specifications of the location, so that in general this commodity is grouped as follows: Javanese snake fruit (*Salacca zalacca* (Gaertner) Voss) with 2-3 seeds and yellowish bone-white flesh, Balinese snake fruit (*Salacca amboinensis* (Becc) Mogeia) with 1-2 seeds and yellowish bone-white flesh, and Padang Sidempuan snake fruit (*Salacca sumatrana* (Becc)) which has slightly reddish flesh [4]. Salak fruit should be picked when it is 80% ripe (around 5 to 5.5 months after the flower blooms). Characteristics of the mature fruit and ready to be harvested are that the arrangement of the fruit skin scales is sparse, in general the color of the fruit skin is dark yellow or reddish brown, the fruit skin is shiny, the hairs or fine thorns on the fruit have disappeared, the pointed tip of the fruit feels soft when pressed and the salak fruit is easy to peel from its stem [5].

To increase the utilization of snakefruit, innovation in fruit processing snakefruit becomes a fruit leather product. Fruit leather is a type of food in the form of sheets made from crushed and dried fruit to form flexible sheets or strips and textured springy. Reviewed from form and the manufacturing process, fruit leather included in dried fruit products other than sweets that can be consumed directly as snacks and food decorations (toppings). Fruit leather has consistency and ambition flavor depends on the type of fruit used. The fruit leather is expected to have good characteristics according to [6]: fruit leather is in the form of thin sheets, has a thickness of 2-3 mm, moisture content of 10-20%, plastic texture, and a distinctive taste according to the type of material used. Objective from activity This to increase mark economical fruit snakefruit become product fruit leather and increase income of MSMEs. At UD. Ambudi Makmur Kramat in Bangkalan own Group Farmer snakefruit, where amount plantation snakefruit Enough wide in this area. Kramat Village is one of the centers of snakefruit plantations in Bangkalan Madura. Several processed products from snakefruit are produced into typical culinary delights and souvenirs by Ambudi Makmur MSMEs. These typical culinary products and souvenirs are still difficult to market. The purpose of this program is to innovate in the processing of snakefruit and improve its marketing as a culinary product and souvenirs typical of Kramat Village Bangkalan. The development of Kramat Village and its surroundings into a tourist village is the target of this community service program. This program to increase mark economical snakefruit become product fruit leather and increase income of MSMEs. At UD. Ambudi Makmur Kramat in Bangkalan own Group Farmer snakefruit.

Fruit leather products can be an innovation method practical for increased consumption fruit on children and adults can be consumed directly as a snack or as a topping for other foods. The principle of making fruit leather, namely with destroy fruit become porridge (puree), print porridge into thin sheets, and dried using an oven or dehydrator. The degree of dryness and appearance of fruit leather can be obtained with a good drying process. Drying fruit leather can be done with various methods such as oven drying with a temperature of 40 - 80 °C, cabinet drying at a temperature of 60 °C for 6 hours, and sun drying [7] [8]. Leather texture formed

from the balance between the constituent ingredients, namely pectin and sugar. The low pectin content in the raw materials requires the addition of pectin to obtain leather products. with texture Which elastic. Temporary That, sugar will tie water so that will affect the hardness of the leather produced [9].

2. Methods

2.1 Place program implementation

The program was implemented in groups Farmer Ambudi Makmur Bangkalan Madura with the snakefruit producer. The Kramat Village area has a lot of snakefruit plants, so this community service activity was carried out at the Ambudi Makmur MSMEs in Kramat Village, Bangkalan Madura. This MSMEs produces various snacks based on salak fruit. The equipment used is processing equipment in general, such as pots, pans, and dodol making tools.

2.2 Stages program implementation

Stages implementation activity Devotion to public in development product processed snakefruit consists of from stage as following:

- a. The preparation stage begins with a survey and socialization of the location where the activity will be carried out. Further, the service team prepares a solution plan for the problems in the partners.
- b. Coordination with the Ambudi Makmur MSMEs team and staff to discuss the program implementation schedule and team involvement.
- c. Preparation and procurement of materials and equipment to be used.
- d. Preparation of tools and materials for the manufacture of snake fruit-based snack products, as fruitleathers. Then continued with training and provision of product making processed food diversification products snakefruit
- e. Manufacturing of various processed products snakefruit
- f. Evaluation and improvement of the quality of snake fruit products
- g. The marketing assistance with digital marketing
- h. mentoring program sustainability at partners

2.3 The procedure of making fruit leather

The procedure of making fruit leather with pectin and glucose syrup are described as follows:

1. Fruit snakefruit dissorted the quality is appropriate size and color Then skin outside peeled. Material other like pectin, syrup glucose, and citric acid are weighed according to the specified formulation. Fruit snakefruit in blanching using the steam method blanching at a temperature of 80°C for 5 minutes. Blanching is intended to minimize the occurrence of browning reactions by inactivating enzymes. The snakefruit was cut into small pieces to make the crushing process easier and to produce a puree with good consistency. Then, the fruit pieces and water in a ratio of 5:1 were crushed using a blender.
2. Puree snakefruit 100 grams was weighed and mixed with 4% pectin; 10% glucose syrup; and citric acid (0.3%). Then, the puree was cooked at a temperature of ± 60 °C for 3 minutes with the aim that all ingredients are mixed and the gel is formed properly. Puree which has been cooked, was poured into a 20 x 15 cm baking pan with a thickness of 3 mm. Fruit Leather fruit snakefruit was dried using a cabinet dryer at 60°C for 6 hours. Flowchart of process making *fruit leather* of snakefruit is presented below:

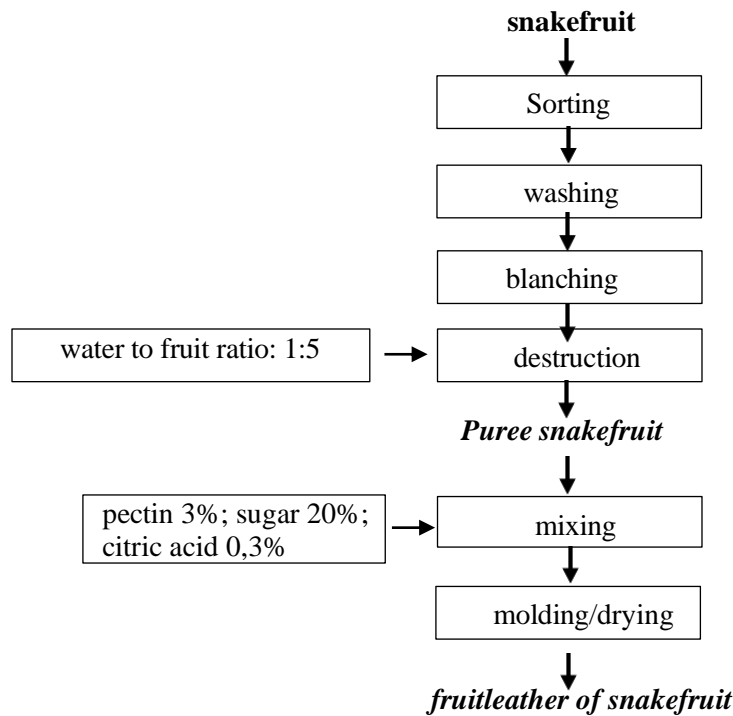


Figure 1. Flowchart of making *fruit leather*.

3. Results and Discussion

Community empowerment activities are carried out based on community problems and needs, with the aim that community empowerment is carried out in a measurable manner and in accordance with the impact desired by the community. The target of this empowerment activity is people with low economic access and low income because they need economic restructuring to improve their welfare.

3.1. The Result of socialization program

The socialization process of the community service program on making snakefruit-based food products in Kramat Bangkalan Village has some very significant interests. Here are some reasons why this socialization is important:

3.1.1. Increasing community knowledge and skills. Socialization can provide new information and knowledge to the community on how to process snakefruit into food products with economic value. This can include good processing methods, preservation techniques, and recipes for processed products such as fruit leather, dodol, chips or snakefruit syrup. Thus, the community can gain new skills that are useful for increasing income.

3.1.2. Diversification of agricultural products. Kramat Bangkalan Village has many snakefruit trees, but the fruit is often only consumed directly or not optimally utilized. Through socialization, the community can learn to develop more varied snakefruit -based products, which not only increase the added value of the snakefruit itself, but also open up wider market opportunities.

3.1.3. Local economic empowerment. By developing snakefruit -based food products, the community can utilize local resources to improve the village economy. Snakefruit processed products that have a higher selling value can help open new business opportunities, both for household businesses and small and medium enterprises (SMEs) that can create new jobs.

3.1.4. Introduction of local products to the wider market. Socialization can include marketing strategies for snakefruit -based food products. The community can be given an understanding of how to market their products, ranging from attractive packaging, using social media for promotion, to establishing cooperation with distributors or larger markets.

3.1.5. Increasing community involvement in the development process. Socialization is also a platform to listen to the needs, expectations, and challenges faced by the community. By involving them in the product

development process, the program can be tailored to local conditions and be well received by the community.

3.2. The Result of snakefruit innovation product

The resulting fruit leather is characterized by an attractive, a compact and slightly sticky texture, and good plasticity so it does not break easily when rolled. The addition of gelling agent in the form of pectin aims to improve the texture of fruit leather products. The amount of added gelling agent affects the resulting texture, elasticity, hardness, strength, and stickiness [10] [11] [12].

Tabel 1. Nutritional value of snakefruit fruit leather.

| Composition | Level (%) |
|------------------|-----------|
| Moisture content | 11.67 |
| Ash Content | 0.88 |
| Fat Content | 0.13 |
| Protein Content | 0.72 |
| Carbohydrate | 86.6 |

Addition sucrose increase level solid and together with pectin changes the characteristics of the puree The raw material becomes more elastic so that it can maintain its shape into a leather product. The amount of sucrose added must be considered so as not to produce rough texture leather due to crystallization and easy to break when dry. The more sucrose added, the higher the tensile strength value of fruit leather. The higher the concentration of sucrose, the more easily broken and less elastic the leather which is produced because sugar will increase the hardness of the texture [13] [6] [14].

This is in line with the results of research A, namely that the higher the concentration of yellow sweet potato starch added, the thicker and more water absorbent the edible straw layer will be [15]. Likewise, the type of starch affects the water content, water resistance, and biodegradation of straw products due to the high amylose content and the ability of starch to absorb water [16].



Figure 2. Machine Mixer dough and products fruit leather.

The ingredients need to make fruit leather are pectin, acid citrate and sugar with the use of an appropriate machine technology. The machine mix all ingredients in homogeneous and even form to produce fruit leather with the same compactness and elasticity in all layer.

Making gels is highly dependent on the gelling mixture agents, sugar, and acid. Therefore, the leather texture resulting from the balance between pectin, sugar, and acid added. If the raw material has a low pectin content, the addition of pectin is necessary to obtain texture leather Which elastic Because pectin produce structure semi-solid gel. The added sugar will bind water and increase the strength of the pectin gel formed by increasing the hydrophobic interactions between pectin molecules. The addition of acid produces high acid conditions resulting in conditions that make easier for pectin to form a stronger structure because pectin requires acidic conditions to form a gel network, because it affects the hardness of the leather produced [9].



Figure 3. Counseling and training making fruit leather fruit snakefruit.

The processing of snakefruit was initially only to help improve the economy of the community, especially the salak farmers. With the utilization of snakefruit into processed products, it is indeed quite helpful for snakefruit farmers and also to increase the snakefruit value. This is proven by the absence of snakefruit being thrown away on the side of the road and market areas during the harvest season. Initially, snakefruit was only used as a basic ingredient for making dodol (chewing sweet), then developed into the basic ingredient of snakefruit chips, dates or candies. Then another problem arose where it was difficult to market processed salak products outside the region. This is due to various factors, ranging from the licensing system which tends to be complicated, to the lack of human resource capabilities. In addition, the products are processed and packaged traditionally and less able to attract buyers. The products are also not durable and spoil very quickly.

3.3. The Result of snakefruit innovation product

The development of Kramat Village and its surroundings become village tour making agrotourism actors and snake fruit processors take the initiative to develop processed snake fruit products into culinary and souvenirs typical of Kramat Tourism Village. However, the development process is not easy, as it requires various kinds of knowledge ranging from processing, packaging to marketing. In the empowerment strategy public hamlet Holy this is also done digital marketing assistance through marketing with social media groups whatsapp , Instagram or facebook. In the digital era, marketing food products using electronic devices/internet or known as digital marketing is very necessary. Digital marketing allows producers not only to market but also to communicate with potential consumers online.

In addition, sellers must also pay attention to determine customer's target to identify the needs of potential consumers and create interesting online content, although each business has a different way of implementing digital marketing strategies. In digital marketing, the role of interesting content is very essential. Marketing content aims to generate brand awareness), traffic growth, prospect and customer acquisition. Media that can be used for content marketing strategies include: blog posts, e- books and articles, infographics, online brochures. For it is an empowerment program public or perpetrator business done in a way continuous in mentoring products innovation and marketing.

The community empowerment strategy on human resource development is carried out through an approach with various community leaders to ensure that the implementation of empowerment can be achieved according to the target and on target. Previous study [17] mentioned the importance of the role of higher education institutions in the process of exchanging knowledge in supporting local economic development in rural areas. as part of and determining community empowerment methods that are in accordance with the social and cultural characteristics of the local community

Community empowerment evaluation measurements show that evaluation of the impact of community empowerment has been carried out through community capacity building. The program results show quite good results, meaning that the community has been able to understand the practical empowerment capabilities

that have been given, such as the ability to increase economic added value through effective administrative governance and marketing management, compiling product administration and marketing through the creation of Instagram and blogs. However, even though the community is able to demonstrate positive results during the evaluation, there is a tendency that the community still needs continuous assistance and periodic supervision, so that the empowerment program that has been provided can be run sustainably.

In general, the evaluation stage of the impact of community empowerment has been running effectively and periodic assistance is carried out, so that the impact of community economic empowerment can run sustainably. This is in line [18] which states that community empowerment always tends to be partial and depends on local conditions and contexts. Therefore, according to [19], universities need a breakthrough or sustainable community empowerment model innovation approach to measure how sustainable impacts can be achieved. Sustainable community empowerment model innovation can be done through intensive guidance and regular schedules, so that collaboration and integration of universities and communities are created. In addition, [3] said that in the context of community empowerment, it is important to introduce community-based monitoring as a means to increase community resilience and welfare.

The purpose of community empowerment is an important factor in contributing to the implications of community empowerment targets and the existence of roles. universities, community empowerment strategies have been implemented to accommodate communities and exchange of knowledge, and aspects of the operational realm of community empowerment have emphasized identifying community needs and problems and in accordance with community aspirations [20].

4. Conclusions

A community empowerment strategy has been running effectively through community involvement in the implementation of empowerment programs with innovation product from snakefruit, so that the level of community knowledge and skills increases. In addition, the community service aims to understand and accommodate empowerment communities within the community, as well as becoming the most appropriate empowerment strategy and method in increasing the exchange of knowledge that is in accordance with the social and cultural characteristics of the community.

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