Processing Papaya Fruit into Snacks as a Food Security Innovation in Mandiku Hamlet, Sidodadi Village

Andi Dwi Sandi Hariyono[1], Aulavia Hidayaturrobbani[2], Shinta Mayasari[3*]
[1,2]Pharmacy Study Program, University of dr. Soebandi, [3]Nursing Study Program, University of Jember
E-mail: shintamayasari@uds.ac.id

Dusun Mandiku in the village of Sidodadi is an area with abundant agricultural potential. One of the most commonly found agricultural products in this hamlet is papaya. Papaya plants have high economic value because they have many uses, from the roots, leaves, fruit, stems, to the flowers. The objective of this research is to develop an innovation in papaya processing into a snack, which not only benefits the economic value of papaya but also serves as a concrete step in supporting village food security. The research method employed a descriptive qualitative approach. The research results also show that this papaya processing innovation brings several important benefits. First, from an economic perspective, the community gains additional income from the sale of processed products. Papayas that were previously unsold or discarded can now generate income. Second, from a social perspective, this activity involves housewives, fostering unity, cooperation, and enhancing family self-reliance. Third, from a food safety perspective, papaya snacks can be stored longer than fresh papaya, making them a food reserve when needed.
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Corresponding Author:
Ridhella Bukhari
Universitas Putra Indonesia YPTK Padang
ozifera396@gmail.com

1. Introduction

Mandiku Hamlet, located in Sidodadi Village, is an area with abundant agricultural potential. One of the agricultural products abundant in this hamlet is papaya. Papaya is a plant that grows abundantly in tropical climates. Papaya plants have high economic value due to their many uses, from the roots, leaves, fruit, stems, and flowers.(Ridwanulloh et al., 2025)The benefits of each part include: 1) the roots can be used as a medicine for pinworms, kidney disease, and bladder disease; 2) the leaves can be used as a salad, appetite enhancer, a source of vitamin A, can treat various diseases such as beriberi, malaria, dengue fever, stomach cramps, and fever; 3) the stems can be taken and used for animal feed; 4) the flowers can be used as food and ornamental flowers; 5) the fruit can be used as a vegetable, as a medicine to facilitate bowel movements, as a sweet ingredient, puree, a mixture in sauces, pasta, stomach disorders, mouth ulcers, and lack of breast milk (for unripe fruit) 6) the seeds can be useful for reducing weight, as a worm medicine, and can be used as a medicine to induce sweating for colds; 7) the sap can be useful for softening meat, can smooth the skin, raw materials for the pharmaceutical industry, and raw materials for cosmetics(Munawaroh & Islam, 2021).

Papayas thrive in almost every yard and community plot, resulting in abundant production year-round. Papayas are a popular seed-bearing plant. Besides being easy to care for, papayas are a source of vitamin C and lipopen, which boost the immune system and aid digestion. However, papayas have traditionally only been consumed when ripe due to a lack of skills in processing them into interesting culinary creations.(Syafitri & Malasari, 2023)However, the abundance of papaya is often not matched by optimal utilization. Many papayas are only consumed fresh, and some are even thrown away because they don't have time to consume them.

This issue presents both challenges and opportunities. On the one hand, the abundance of papaya has the potential to become waste if not utilized promptly. However, on the other hand, papaya also offers significant potential for processing into value-added products that are more durable, nutritious, and marketable. One solution available to the people of Mandiku Hamlet is to process papaya into a variety of healthy snacks, such as papaya chips, papaya dodol (a type of sweet and sour fruit), papaya jam, and even dried papaya.

The innovation of processing papaya into snacks not only increases the fruit's economic value but also represents a concrete step in supporting village food security. Diversifying papaya processing options provides the community with a healthy, affordable, and locally sourced food alternative. Furthermore, this venture has the potential to create new jobs, increase family income, and establish processed papaya products as a distinctive feature of Mandiku Hamlet. Therefore, it is important to introduce and develop papaya processing into snacks as one of the food security innovation strategies in Mandiku Hamlet, Sidodadi Village.

2. Method

Research on processing papaya into snacks as a food security innovation in Mandiku Hamlet, Sidodadi Village, was conducted using a qualitative descriptive approach. This approach was chosen because the research did not aim to calculate numbers but rather to describe the actual conditions on the ground as they are. The research process began with direct field observations to assess the availability of papaya in Mandiku Hamlet, how the community utilizes it, and the challenges they face. Through these observations, the researchers learned that papaya is abundant in the hamlet, but not widely utilized as a processed product.(Mayasari et al., 2025).

In addition to observations, researchers also conducted interviews with various stakeholders, including papaya farmers, housewives, small business owners, and village officials. These interviews provided information about papaya processing opportunities, potential product ideas, and community expectations for the development of processed papaya products. To strengthen the data, researchers also carried out documentation, such as taking photos, recording the processing process, and collecting supporting data from community activities.

The collected data was then analyzed using the Business Model Canvas (BMC). Through this analysis, the papaya processing business was mapped into nine key sections: who the consumers are, what the product's value is, how it will be sold, customer relationships, revenue sources, required resources, core activities, partners, and costs. In this way, the research results can provide a clear picture of how papaya can be processed into various healthy snacks. In addition to adding economic value, this processing can also help maintain food security in Mandiku Hamlet, Sidodadi Village.

3. Results and Discussion

Research on processing papaya into snacks in Mandiku Hamlet, Sidodadi Village, shows that this village actually has enormous food resource potential. Papayas thrive in almost every yard, both homegrown and wild. People grow papaya because it's easy to care for, doesn't require a lot of money, and the fruit can be harvested year-round. However, papaya harvests have not been optimally managed. Many papayas are consumed only in limited quantities, sold at very low prices, or even left to rot because the abundant harvest is not matched by consumer purchasing power.

Through direct field observations, it was clear that the main problem lay not in the availability of papaya, but rather in how it was processed and utilized. This led to the idea of processing papaya into various snacks that were more durable, practical, and had economic value. Based on observations and interviews, and considering statements by(Yantini & Handira, 2024)which states that one way to extend the shelf life of papaya is to process it into papaya chips. Chips are a processed product that have aroma, taste, texture, and appearance that reflect the raw material. Utilizing papaya processed into papaya chips not only increases its economic value but also makes it a more attractive processed food product. We decided to try processing the papaya into a product like papaya chips before introducing it to the public.

After much trial and error, we finally found the perfect recipe. We use unripe papaya. Peel the unripe papaya until the sap and skin are removed. Then, it is thinly sliced, washed thoroughly with salt to remove any remaining sap, coated in flour seasoned with garlic, coriander powder, and other spices. Then, it is fried twice. The first time, the papaya is half-cooked, then allowed to cool, then the second time, until crispy. Once drained, it is seasoned with instant seasonings such as Balado seasoning and cheese. The savory and crunchy taste makes it a favorite among both children and adults. This product is still made using simple household tools, but it has already shown quite satisfactory results, successfully transforming ordinary papaya into a processed food with added value. Here are the results:

Figure 1. Papaya snack

Figure 2. Product Manufacturing Education and Training

From a business analysis perspective, the Business Model Canvas (BMC) approach was used to understand the product's potential sustainability. The primary target consumer segments include local residents of Mandiku Hamlet, small food stalls, schoolchildren, and shoppers at traditional markets around the village. If developed more effectively, this product could also be marketed in local souvenir shops or sold online. The added value proposition of this papaya snack is its unique flavor derived from natural ingredients, abundant raw material availability, and health benefits due to its fruit-based nature.

In terms of distribution, products are still being marketed simply: sold directly in stalls, offered door-to-door, or brought to weekly markets. Promotion is done through word-of-mouth, and some communities have even begun using social media platforms like WhatsApp to promote the product. Relationships with consumers are built through friendly service, maintaining product quality, and offering free testers at village events.

The community's primary resources are abundant papaya, skilled housewives, and the support of a spirit of mutual cooperation. Key activities in this business include production, packaging, and product marketing. Potential partners include farmer groups as raw material suppliers, village cooperatives to assist with capital access, and local MSMEs as marketing networks. The largest costs in this business come not from the papaya, which is readily available in yards, but from additional ingredients such as sugar, cooking oil, and plastic packaging.

The research also shows that this papaya processing innovation brings several important benefits. First, economically, the community gains additional income from the sale of processed products. Papayas that were previously unsold or thrown away can now generate income. Second, socially, this activity engages housewives, fostering togetherness, cooperation, and increasing family independence. Third, from a food security perspective, papaya snack products can be stored longer than fresh papaya, making them a food reserve when needed.

Despite this, several challenges remain. The main issues lie in limited capital, rudimentary production technology, and skills in packaging and marketing. While the resulting product is delicious, the packaging is less attractive than manufactured products. Furthermore, the marketing network is still limited to the surrounding villages, resulting in suboptimal sales volume. Furthermore, the issue of water content in our processed products is another factor that must be considered by manufacturers. Due to the limited equipment we use, we cannot guarantee that the water content in these products has been reduced to a minimum. Water content can affect the quality of snacks, as it can affect their texture and shelf life. Food products processed through frying must have a low water content.

Therefore, if the water content in processed papaya chips is higher, the shelf life will be shorter due to the high water content. This can accelerate mold growth and damage the product. However, if the water content is lower, the papaya chips will last longer.(Abriana et al., 2021)Despite the challenges, this research demonstrates that with creativity, mutual cooperation, and village support, papaya can become a superior product that supports food security and improves community well-being. If processing and marketing continue to improve, Mandiku Hamlet could become known as one of the papaya processing centers in the region.

4. Conclusion

Research on processing papaya into snacks in Mandiku Hamlet, Sidodadi Village, shows that the abundant potential of papaya can be utilized in a more valuable way through innovative products such as chips, jams, preserves, and candies. This innovation not only extends the shelf life of papaya and reduces crop waste, but also opens up small business opportunities for the community, especially housewives, thereby increasing family income. Furthermore, this activity fosters a spirit of togetherness and mutual cooperation in the village, and supports food security by providing healthy, durable, and affordable products. Although there are still obstacles in terms of capital, packaging, and marketing, the results of this study demonstrate that creativity in processing local resources can be a path to increasingwelfare and independence of village communities.

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