



Developing Cassava Based Frozen Products to Increase Housewife's Income in Benda Baru Village, South Tangerang

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ABSTRACT

Frozen snacks innovation is a food that is currently in trend and has a great opportunity to be developed. Referring the Jakarta State University community service program 2020-2024 is directed at 4 (four) focus activities, namely: Education; Public welfare; Art and culture; and Environment. Broadly speaking, the implementation of the PKM program is community empowerment in preparing PKM plans for the community in the form of product innovation originating from cassava tubers, thereby increasing culinary productivity through optimizing cassava tubers and can increase household income-generating. The aim is to increase the community's ability to plan and manage the potential of cassava tubers as an effort to form a group of people who are economically independent and prosperous. Another goal is to stimulate the productivity of household culinary businesses that are widely cultivated by housewives in Benda Baru village, South Tangerang, especially in the current state of the Covid-19 pandemic. The method used in this activity is the provision of material, direct practice, and assistance in making frozen snack products, namely french fries and cassava croquettes using cassava tubers as one of the variations of the local ingredients used.

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INTRODUCTION

Cassava (*Manihot Esculenta*), also known as cassava or tuber, is a tropical and subtropical annual tree of the Euphorbiaceae family. The tuber is widely known as the basic producer of carbohydrates and the leaves are considered a vegetable. Initially, cassava (*Manihot esculenta*) was found growing wild in the forest, in people's gardens, and could even grow at random places. In line with the increasing market demand, some cassava is cultivated in Indonesia. Cassava is a tropical and subtropical annual tree that can be planted throughout the year, and in almost every region in Indonesia. The part that is edible from the cassava plant beside the tubers or roots is the leaves, it is usually used for a variety of meals, especially in vegetable dishes. The relatively cheap price of cassava could also potentially be developed into various kinds of products.

As a food ingredient, cassava has its advantages compared to others. It lies in the content of carbohydrates, fat, protein, calories, phosphorus, and its delicious taste. Fresh cassava has a chemical composition consisting of about 60% moisture content, 35% starch, 2.5% crude fiber, 1% protein content, fat content, 0.5%, and 1% ash content Prabawati et al (2011).

Apart from that, cassava processing can increase income for the agricultural sector (plantation). Cassava can be cooked in many ways, it can be an ingredient for a variety of dishes. However, cassava tubers can not stand for long storage even though it is placed in the refrigerator, for that it needs further processing to make it more durable. One of them is produced into cassava flour.

Modern food has become a trend for Indonesian. People love fast food, especially the youths. This modern way of processing is what makes current food products survive in the market. The restaurants that use this kind of modern technology are always full of customers. Creativity is required in processing the foods, along with some touch of innovation. As a result, we could maintain local food taste with a few adjustments to modernization.

According to Sumaryanto (2009), the global financial crisis and climate change have made food security more vulnerable. Therefore, the pillars of food security need to be strengthened. We need to ensure that the pillar of food security does not only rely on quantitative dimensions in supply, distribution, and purchasing power but also complemented by an expansion of the food spectrum. One feasible way is to develop diversification based on local food ingredients. This paper discusses the critical points of national food security, examines the importance of diversification based on local food, and the prospects for diversification as one of the pillars of Indonesian food security.

Producing cassava products will have cost less if one has their cassava cultivation. Cultivating cassava is relatively easy as the soil in Indonesia supports the growth of cassava, it has a fairly fertile land. Besides, in Indonesia, seeds and planting mediums are quite accessible at affordable prices.

The prospect of creating a cassava business in Indonesia is quite promising. In recent years, people's interest in consuming cassava has significantly increased. This behavior is influenced by the lifestyle of people who increasingly choose a healthy vegetarian lifestyle. From a business perspective, the cassava product could be very profitable. This is due to the relatively short harvest time of cassava, namely 1–5 months. Cassava market opportunities are not limited to fresh cassava but include processed products such as cassava flour.

So the community service program from Culinary Art Study Program (*Prodi Tata Boga*) decided to provide training in processing Cassava Croquettes and Cassava French Fries to housewives or PKK cadres in Benda Baru Village, Pamulang District, South Tangerang. The location is selected based on the local food potential in Benda Baru Village, they produce various tubers, such as cassava, sweet potato, and *kimpul*. Apart from that, there are a large number of housewives in the area; consisting of 24 Rukun Warga. In addition, the location where residents live is directly adjacent to modern housing which allows the marketing of their products to that place.

The skills obtained from the training could increase the expertise of housewives in creating Croquettes and French Fries Cassava. It is hoped to empower housewives in gaining more skills and to increase their income. The training activities for the processing of Croquettes and French Fries Cassava can help accelerate efforts to develop creative, innovative, and entrepreneurial housewives. Besides providing knowledge and skills in the field of culinary, the target audience has several choices in cassava processing. This activity also obtains the state of the art training for the community that supports the food diversification program developed into frozen products.

LITERATURE REVIEW

According to Prabawati et al (2011), cassava (*Manihot esculenta* Crantz) is at the top of Indonesia's local carbohydrate sources which ranks third after rice and maize. This plant is the raw material with the most potential to be processed into flour. Fresh cassava has a chemical composition consisting of about 60% water content, 35% starch, 2.5% crude fiber, 1% protein content, fat content, 0.5% and 1% ash content, therefore it is a source of carbohydrates and dietary fiber, but it contains little nutrients like protein. Fresh cassava contains glucosidase ionogenic compounds and if there is an oxidation process by the linamarase enzyme it will produce glucose and cyanide acid (HCN) which are marked with blue spots, it will become toxic if consumed at HCN levels of more than 50 ppm.

Prabawati further explained that for direct processing, the raw cassava materials that should be used are the one that's not bitter. Several types of processed cassava are currently becoming a profitable business, such as seasoned chips under various brands: Qtela, Kusuka, and types of Balado chips in West Sumatra. Various types of direct processing from raw cassava materials have developed into

large, medium, and household-scale industries. In addition, cassava can also be used to replace the main ingredient in the manufacture of other products such as Croquettes and French fries which are made in frozen form. The frozen form is a way to make the product last longer.

There are three main aspects of French fries; appearance, crunchiness, and color. French fries are stick-shaped potato slices (usually about $1 \times 1 \times 6-7$ cm in size which is fried by deep frying at a temperature of 180-200 °C until cooked (Burton, 1989). In the trading world, french fries are usually sold frozen, (frozen french fries) or as fast food.

French fries will be made using cassava as the basic material, with the manufacturing stages such as washing, stripping, trimming, sorting, slicing, blanching, and frying. Washing is the first process of processing that aims to remove dirt that sticks on the cassava skin. After washing, peel the cassava to remove the skin. Trimming is done to remove parts that have not been peeled, like the outer layer and other defects. Afterward, the appropriate size of cassava is selected for the French fries. For slicing cassava, we should use a potato slicer so that the resulting size is uniform. Unwanted cassava slices that are too thin, too short, and broken should be removed before blanching. Blanching is a preheating process that is usually carried out on fruits and vegetables to activate natural enzymes contained in these materials, including heat-resistant catalase and peroxidase enzymes (Winarno, 1997).

The frying method used in the process of making french fries is deep frying. Deep frying, is the process in which is the material completely immersed in oil so that the heat penetration of the oil can enter simultaneously on the entire surface of the fried material so that the ingredients are cooked evenly (Ketaren, 1986).

According to Gani (2003) croquette is a portion of food from France. Originally made from ragout (ragu) which is cooled and rolled into egg white and breadcrumbs then fried. In Indonesia, it is made from mashed potatoes, filled with meat and vegetables, and then rolled into bread flour.

Meanwhile, cassava in the croquettes replaces the basic ingredients of potatoes. The filling is up to the liking, it can be filled with vegetables or meat.

IMPLEMENTATION METHOD

This Community Service Program is aimed at a target community of at least 25 participants. This community service program is expected to be able to help the family economy through the role of training participants in the village by utilizing local food. In the long term, the existing local food utilization efforts can create business units in the area that can help improve the welfare of residents.

The way of implementing this activity is by providing materials, direct practice, and assistance. The presentation of materials was carried out in the local hall, with material on local food innovations to

introduce various alternative food sources and introduce several examples of cassava-based food innovations. Techniques for manufacturing processed products and mentoring as well as practices for making and serving products. The instrument used to assess the success and usefulness of this activity is a program evaluation instrument through pre-test and post-test about the knowledge and skills of the community in making various dishes from cassava in Benda Baru, Pamulang sub-district, South Tangerang. It was done through a questionnaire to find out the response or input and suggestions of processing activity training participants. Data were analyzed descriptively with explanations presented in pictures and graphics.

RESULT AND DISCUSSION

Based on the results of the training, it can be concluded that the training went well and succeeded in providing skills to the participants. The main obstacle experienced by the author is the difficulty of gathering with the participant due to the covid-19 pandemic.

The solution is that the training is carried out online by providing videos via YouTube. The pre-test and post-test are done via the Google Form platform. Meanwhile, assistance in product development is done through the Whatsapp Group. Their great enthusiasm made this training run smoothly. So, overall, this training runs well, as can be seen in the documentation of activities, pre, and post-test results, and training participant satisfaction. Documentation of activities can be seen in Figure 1, Figure 2, and Figure 3.



Figure 1.
Opening of the Training



Figure 2.
Footage of Frozen Croquette Training Video



Figure 3.
Footage of Frozen French Fries Training Video

The pre-test and post-test were carried out on all 16 participants. The results shown in Table 1, implies that there is an increase in knowledge from the pre-test average of 69.4 to 93.8 on the average post-test score. There was an increase in the average value of participants' knowledge by 0.79.

Table 1.
Pre Test and Post Test Results

No.	Participant Name	Pre Test	Post Test
1	Murniyati	60	90
2	Dwi Susiana	40	90
3	Indrawati	90	100
4	Sulfa Andriani	90	100
5	Rosita Darya	80	100
6	Saptarini	90	100
7	Sumijatun	90	90
8	Mella Sari Handayani	70	100
9	Sri Wijayanti	70	100
10	Anita Joesoef	70	100
11	Rusmini	100	100
12	Siti Muljawati	70	100
13	Mona Indriyani	50	60
14	Sukamsih	40	90
15	Nunik Purwaningsih	50	90
16	Pranita	50	90
Average		69,4	93,8

The data calculation of knowledge instruments before watching the training video and after watching the training of making croquettes and cassava French fries will then be interpreted using the standard gain as follows (Melzer in Syahfitri, 2008):

Table 2.
Gain Score Share

N-Gain Score	Category
$G > 0,7$	High
$0,3 \leq g \leq 0,7$	Average
$G < 0,3$	Low

Based on table 2 above, the increase in participants' knowledge by 0.79 is in the high category. This shows that after watching the training video of making French fries and frozen cassava croquettes the participants understood what was said and the training video. This result is in line with the research conducted by Muntoha et al. (2015) who conducted training on the use and processing of cassava into a tela-flavored snack, which showed an increase in the knowledge of participants before and after training.

In this training activity, a survey of training participant satisfaction was also carried out. The results of the training participants' satisfaction can be seen in the graph below:

1. Material Delivered

Based on the questionnaire about the material presented by the instructor, it was found that 81% of the participants stated it was **very clear** and 19% stated it was **clear**. For more details, see Figure 4 below.

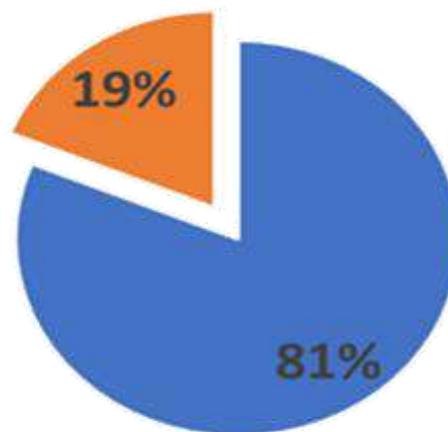


Figure 4.
Material Delivered

2. Suitability of Material with Participants' Needs

Based on the questionnaire about the suitability of the material to the participants' needs, it was found that 69% of the participants stated that they were **very suitable** and 31% stated that they were **suitable**. For more details, it can be seen in Figure 5 below.

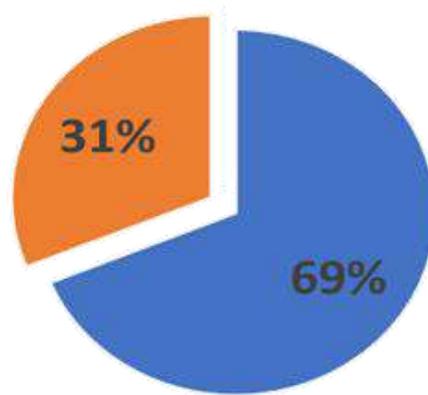


Figure 5.
Suitability of Material with Participants' Needs

3. Explanations Materials, Tools, and Product Manufacturing Processes

Based on the questionnaire about explanations of the materials, tools, and product manufacturing processes, it was found that 44% of participants stated that it was **very clear** and 56% stated that it was **clear**. For more details, it can be seen in Figure 6 below.

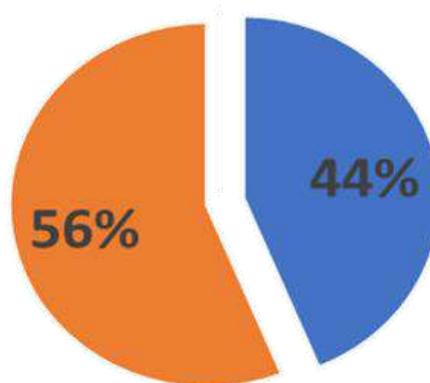


Figure 6.
Explanations of the materials, tools, and product manufacturing processes

4. Sound and Videos Quality

Based on the questionnaire about the quality of sound and learning videos, it was found that 69% of participants said they were **very good** and 19% said they were **good**. For more details, it can be seen in Figure 7 below.

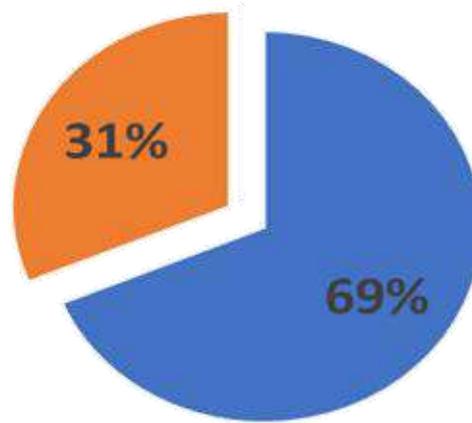


Figure 7.
Sound and Videos Quality

5. Duration of the Training Video

Based on the questionnaire about the material presented by the instructor, it was found that 81% of the participants stated that it was **sufficient** and 19% stated that it was **clear**. For more details, see Figure 8 below.

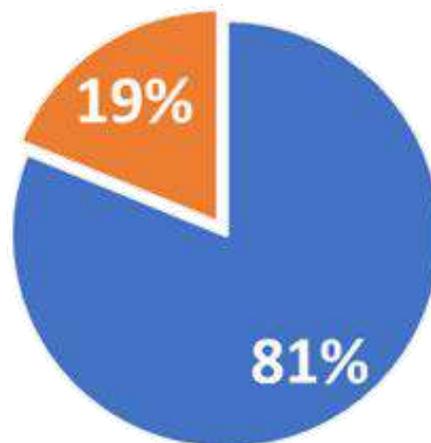


Figure 8.
Duration of the Training Video

6. Interest in Making Exemplary Products

Based on the questionnaire about being interested in making exemplary products, it was found that 96% of the participants were **very interested** and 19% stated it was **clear**. For more details, see Figure 9 below.

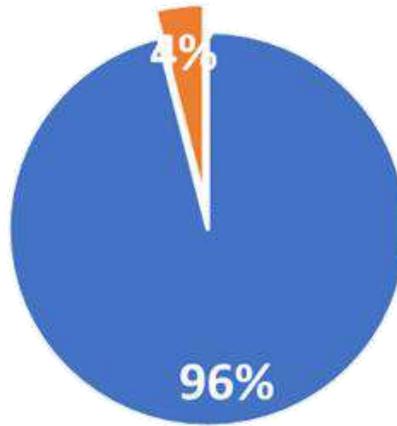


Figure 9.
Interest in Making Exemplary Products

7. The Exemplified Product Is Eligible For Consumption

Based on the questionnaire about whether the products exemplified are qualified for consumption or not, it was found that 100% of the participants said **yes**. For more details, it can be seen in Figure 10 below.

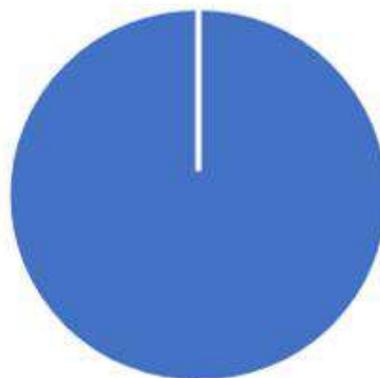


Figure 10.
The Exemplified Product is Eligible for Consumption

8. The Exemplified Product Feasible For The Market

Based on the questionnaire about whether the products exemplified are feasible for the market or not, it was found that 37% of the participants stated that it was **very feasible** and 63% stated that it was **feasible**. For more details, it can be seen in Figure 11 below.

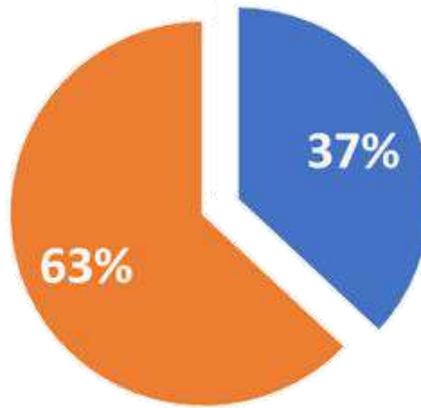


Figure 11.
The Exemplified Product Feasible for the Market

9. Presentation of the Speaker (Instructor)

Based on the questionnaire about the presentation material of the presenters (instructors), it was found that 31% of participants said they were **very good** and 69% said they were **good**. For more details, it can be seen in Figure 12 below.

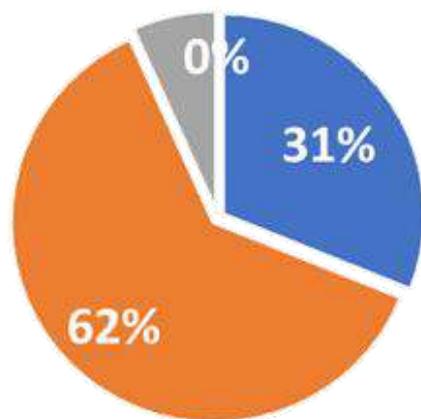


Figure 12.
Presentation of the Speaker (Instructor)

10. Product Linkages Exemplified With Entrepreneurial Interest

Based on the questionnaire about the material related to the product being exemplified with entrepreneurial interest, it was found that 96% of the participants were **very interested** and 4% stated that they were **interested**. For more details, see Figure 13 below.

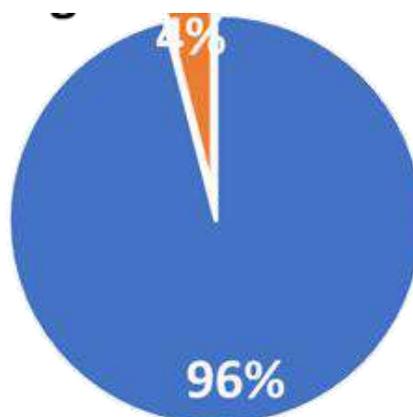


Figure 13.
Product Linkages Exemplified with Entrepreneurial Interest

Based on the data obtained regarding the satisfaction of training participants in general, as many as 74% of participants gave **very satisfying** responses to the training activities, while 22% of participants gave **satisfied** responses and 4% gave **quite satisfied** responses. The general conclusion of the training results was in the **good category** and it can be said that the training in the context of implementing P2M succeeded in providing skills to the training participants.

CONCLUSIONS AND SUGGESTIONS

This training for housewives in Benda Baru Village, Pamulang District, South Tangerang provides new insights and knowledge about different ways to process cassava. With the abundance of the main raw material, namely cassava, in Benda Baru Village, this training will be very beneficial for housewives. Furthermore, with a more structured business plan, Cassava Croquettes and French fries can become a new way to increase family income.

REFERENCES

- Ganie, S.N. 2003. UPABOGA di Indonesia. Ensiklopedia Pangan dan Kumpulan Resep. Jakarta: PT. Gaya Favorit Press.
- Ketaren, S. 1986. Pengantar Teknologi Minyak dan Lemak Pangan, Jakarta : UIPress.
- Koswara, S. 2009. Teknologi Pengolahan Singkong. Fakultas Teknologi Pertanian, Institut Pertanian

Bogor, Bogor.

- Muntoha, Jamroni & Ummayah, R.U. 2015. Pelatihan Pemanfaatan Dan Pengolahan Singkong Menjadi Makanan Ringan Tela Rasa. *Jurnal Inovasi dan Kewirausahaan* Volume 4 No. 3, September 2015, hal. 188-193.
- Prabawati, S., Richana, N. dan Suismono. 2011. Inovasi Pengolahan Singkong Meningkatkan Pendapatan dan Diversifikasi Pangan - Balai Besar Penelitian dan Pengembangan Pascapanen Pertanian. *Jurnal Agro Inovasi* Edisi 4-10 Mei 2011 No.3404 Tahun XLI
- Sumaryanto. Diversifikasi Sebagai Salah Satu Pilar Ketahanan Pangan. *Forum Penelitian Agro Ekonomi*. Volume 27 No. 2, Desember 2009, hal. 93 – 108.
- Winarno, F.G.1997. *Kimia Pangan dan Gizi*. Jakarta : Gramedia Pustaka utama