

Empowerment of Pineapple Chip Business for Maju Tani Group in Boangmanalu Village Salak Subdistrict Pakpak Bharat Regency

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Abstract. Boangmanalu Village is a village located in Pakpak Bharat Regency, North Sumatra Province. The majority livelihoods of the population are agriculture and the economy is focused on agriculture. Agricultural products from Pakpak Bharat Regency include Gambir, Patchouli, Coffee, Sukat (Taro), Citronella, Pineapple, etc. The partners in this activity are entrepreneurial farmers, named Maju Tani Group in Boangmanalu Village. Since 2021, this group has been producing pineapple chips as an effort to empower pineapple fruit. However, the production of these pineapple chips still has a number of limitations. The problem encountered is the unoptimal implementation of this business in the production side, that the cover of pineapple chips package are not attractive, the manufacturing process pineapple chips that still use conventional methods without the use of machines, and the management which still unorganized. The solutions offered to this problem are to create a new design of pineapple chip cover packaging, provide a Vacuum Frying machine, and held organizational management training. With this activity, the members of the Maju Tani Group will gain knowledge and experience directly in improving the pineapple chip business and the management of the organization. This service activity also purposed to empower the Maju Tani Group and increase the Pineapple Chips business which ultimately contributes to the improvement of the family economy in Boangmanalu Village.

Keywords: Pineapple Chips, Packaging Design, Vacuum Frying Machine, Organizational Management, Maju Tani Group.

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1. Introduction

Pakpak Bharat Regency is a district located in the North Sumatra Province. This regency is the result of the division of Dairi Regency, which was officially established as legally independent in 2003, so it can be said that this district is still relatively young. This district has the least population in North Sumatra Province. The jobs of the majority of the population as farmers and the economy are focused on agriculture. Agricultural products from Pakpak Bharat Regency include Gambir, Patchouli, Coffee, Sukat (Taro), Fragrant Lemongrass, Pineapple, etc. Some of these agricultural products are superior commodities that have received a certificate of registration of local plant varieties from the Center for Plant Protection and Agricultural Licensing of the Indonesian Ministry of Agriculture, namely Pakpak Pineapple, Gambir Pakpak, Sukat (Taro) Pakpak, and Pakpak Fragrant Citronella.

Seeing the importance of the agricultural sector in Pakpak Bharat Regency, agricultural commodities should be developed and empowered into a product of economic value. Entrepreneurship has an important role in economic growth, increasing people's incomes and absorbing labor [1]. Based on analysis of the situation or initial observations made in Pakpak Bharat Regency, agricultural products have not been empowered properly so that they have not provided maximum results for the participating farmers. One of them is pineapple. The pineapples produced are still being distributed in the form of raw fruit, while pineapple is very profitable if it is processed into more economical products.

To success the development of the entrepreneurship-based agricultural sector, entrepreneur farmers are needed. Entrepreneurial farmers are farmers who are able to identify and exploit existing, high-value market opportunities by utilizing agricultural resources owned by farmers in a way that flexible and innovative [2]. Partners in this Community Service activity are entrepreneurial farmers namely the Farmers Group in Boangmanalu Village, Salak District, Pakpak Bharat Regency which named "Maju Tani". The Maju Tani Group was formed on January 11, 2021 which consists of 20 people. The main purpose of forming this group is to produce pineapple chips processed products. This is an effort to empower pineapples because pineapple sales in the market is not stable if it is sold in raw form only. One of pineapple farmer in Maju Tani Group is Mr. R. Boangmanalu. He said that when the harvest season, the pineapple fruit produced is about 300-500 pieces in 1 time harvest. Pineapple fruit that has been harvested is directly distributed to traders and sold Pakpak Bharat Regency and Medan City. However, the pineapples that have been sold to traders is not infrequently returned to farmers because of unstable demand in the market. Pineapple fruit is easily damaged due to its high water content [3] so the returned pineapple fruit is wasted and results in losses to people farmer. Not only during the harvest season, the pineapples that are sold are often not behavior resulting in rotten pineapple fruit and wasted. This is due to factors characteristics of consumers who cannot consume pineapple freely because of pineapple contains acid. Actually, pineapple has high nutritional value and is good for health, but for some people consuming pineapple is not good because it has high acid content.

Since 2021, Maju Tani Group has started marketing pineapple chips. However, the production of pineapple chips still has a number of limitations. Problems encountered are, first: the unattractive packaging of pineapple chips. Pineapple chips have been packed in plain plastic chips. Packaging uses transparent plastic material without the presence of a screen printing or business logo so that the design looks simple, general, and very ordinary. The packaging design is less attractive and has not been able to compete in the market. Besides that, the information on the packaging is incomplete, so the pineapple chips packaging does not provide complete information regarding expiration dates and raw materials for manufacture.

The second problem is the processing of pineapple chips which still use the conventional method without the use of machines. The unstable taste of pineapple chips is due to processing chips that are still conventional so that the spice dose is not fixed. Processing pineapple chips start with squeezing the pineapple, then the pineapple juice is mixed with flour and other additives to complement the taste. Mixed pineapple with flour and then dried. The time for drying usually takes 1 day in order to produce crispy and tasty pineapple chips. After the drying process finished, then the pineapple can be fried. The processing of pineapple chips is usually carried out in the house of the head of the farmer group located at Lae Ordi Street Number 51. The processing takes quite a long time, starting from the harvesting process, peeling the pineapple, cutting the pineapple, drying, and frying, so that only a few chips are produced even though they are already take quite a long time. In one production, the pineapple chips produced are as much as 5-8kg using 20 raw pineapple seeds. The disadvantages of this method are hygienic standards that cannot be guaranteed because the equipment uses equipment simple home processing and processing using conventional methods. So, improvements to the production method also need to be done so that the processing of chips pineapple becomes more effective and efficient.

The third problem is in the management side namely the organizational structure and and the absence of a clear Job Description. This is because of this group is considered an informal business based on the principle of kinship only. This group led by the Chairman and assisted by the Secretary and Treasurer. However, the organizational structure it is only written on paper without a clear Job Description. If this left alone, it will hinder the progress of business progress. Despite this effort is an informal business structure but every organization needs a clear vision, mission and goals useful as a framework for business success and sustainability. Therefore it is important once for the members especially the head of the farmer group to have a clear Standard Operating Procedure (SOP) document. Good management organizational governance is crucial to business success which is executed. [4] in his research entitled found that a lot of effort who are still hindered from advancing due to the implementation of the organizational management

structure that has not regular. Based on this, improving the management of the Maju group's pineapple chip business are needed to help farmers in running their businesses.

Thus, the purpose of this Community Service activity is as an effort or solution in dealing with problems faced by partners. These problems include production side, the unattractive pineapple chips packaging, conventional methods pineapple chips processing and management problem, poorly organization governance. Handling the three problems become the main focus in this activity. High market demand for materials food, especially for chips will never be empty [5] so that improvements to productive community groups such as farmer groups need to continue supported. This pineapple chip business empowerment is not only profitable for the members farmer groups but also contribute to improving the image of Pakpak Bharat Regency because these pineapple chips have the potential to be used as souvenirs typical of the district Pakpak Bharat.

2. Method

The method used to conduct this activity is training and mentoring. Training is an activity carried out to train or develop skills and knowledge for oneself or other persons connected with certain skills. Mentoring is work carried out by a facilitator or community assistant in various program activities. Companion is also often called mentorship. The facilitator acts as a facilitator for an activity that is being trained. The thing that will be trained in this activity is about making interesting pineapple chips packaging, Vacuum Frying machine usage procedures, and organization management training.

The materials and equipments needed in this community service activity are:

- a. Standing Pouch for chips packaging.
- b. Vacuum Frying Machine.
- c. Spinner.
- d. 20 liters of Barco cooking oil.
- e. 20 pineapples.
- f. 300 liters of water for use in the Vacuum Frying machine.
- g. Gas stove.
- h. Frying utensils such as tongs, bowl, gloves, knife, white plastic. etc.

The steps for making pineapple chips using a Vacuum Frying machine are:

1. Peel the pineapple with a knife until it is clean.
2. Remove the scraggly dots or eyes of pineapple using a knife. Carefully cut the eyes out in a connected diagonal slope, turning the pineapple until all of the eyes are gone.
3. After the pineapple has peeled and scraggly dots are gone, wash the pineapple.
4. Cut the pineapple into 2 or 4 parts and remove the pineapple core, then slice it neatly.
5. Afterwards, weighed the pineapple and the weight is recorded.
6. Next up, the pineapple is drained using a spinner machine for 2-3 minutes.
7. After draining, weighed the pineapple and the weight is recorded.
8. Pineapple is ready to be fried using a Vacuum Frying machine.
9. When frying pineapple chips in the Vacuum Frying machine, the pineapple is stirred every 15 minutes.
10. Pineapple is fried for approximately an hour.
11. If the fried pineapple chips are cooked, turn off the Vacuum Frying machine which is connected to the LPG conductor hose. After turning it off, wait 10 minutes and then lift the pineapple chips and put them in a bowl.
12. Pineapple chips that have been produced are weighed and record the weight.
13. After that, drain the pineapple chips using a spinner until the oil in the chips is reduced.
14. Pineapple chips that have been drained using a spinner are weighed again and the weight is recorded.
15. Pack the pineapple chips using the plastic that has been provided.

The working principle of the Vacuum Frying machine is to suck the moisture content in the fruit at high speed so that the pores of the fruit flesh do not close quickly, with the result that the moisture content in the fruit can be absorbed perfectly. The principle of action by regulating the balance of temperature and

vacuum pressure. In this vacuum fryer, the water vapor that occurs during the frying process is sucked up by the pump. After going through the condenser, the water vapor condenses and the condensate that occurs can be expelled. The circulation of cooling water in the condenser is turned on during the frying process [6]. With the working principle of this machine, the team believes that the solution to change the pineapple chip production system for the better is to use this machine.

3. Findings

3.1. Preparatory Stage

Before the activity is carried out at the service location, several preparations are made in advance, the first is the team meeting. To design the concept and technical implementation of the activity, the team conducted a meeting to discuss the concept and technical implementation of the activity. The concept of the activity is to prepare all equipments, simulate the use of Vacuum Frying machines, carry out location survey and give invitations to participants with a time span adjacent to the implementation of activities in order to manifest energy, time, and costs. At this first meeting, the team has not yet determined the implementation date because we have to coordinate with partners first. In this meeting, we discussed regarding technical implementation schedules that must be carried out by the team, for example when the Vacuum Frying machine simulation is carried out, equipment preparation, etc. After coordinating with partners and village head, schedule for the implementation of activities was obtained, on July 27th, 2022. Before the implementation activity, a simulation of the use of a Vacuum Frying machine is carried out first. This simulation activity was carried out on Saturday, July 16th, 2022. The team collaborated with CV Teknologi Tepat Guna in the assembly of the Vacuum Frying machine and the simulation to use this machine.

After all preparations for the activity were completed, the team conducted a location survey before the activity was carried out. This location survey is in order to condition service activities. The location survey was conducted on July 25th, 2022. Location survey are carried out to review the location of service activities, coordination with partners, coordination with village head, and provide invitations to participate in service activities for all members of the Maju Tani group along with village officials. Based on the results of discussions with the village head, the implementation of the activity was held in the Boangmanalu Village Hall.

3.2. Implementation Stage

The Community Service activity was held on Wednesday, July 27th, 2022 and was held in Boangmanalu Village, Salak District, Pakpak Bharat Regency. The Community Serrvice team departed from Medan on Tuesday, July 26th, 2022. The Community Partnership Service team arrived in Salak, Pakpak Bharat in the afternoon at 16.00 WIB. The team prepares the room, puts up banners, conditions the room etc. The event on Wednesday, July 27th, 2022 starts at 09.00 WIB. This activity was attended by the Village Head, Imanuel Boangmanalu and village officials, then the Community Service Program partner, the Maju Tani Group, chaired by R. Boangmanalu. The Community Service program event started according to the rundown of the event, followed by remarks from the Community Partnership program Chair, the Chair of the Maju Tani Group, the Village Head and officially opened by the Village Head. The Chairperson of Community Service program in her speech explained that the purpose of the presence of his entourage to Boangmanalu Village at this time was within the framework of the Community Service Program with the topic of Business Empowerment of Pineapple Chips for Advanced Farmers Group in Boangmanalu Village, Salak District, Pakpak Bharat Regency. The head of the Community Partnership program said that with the activity, it is hoped that the members of the farmer group can gain knowledge and experience on how to empower agricultural products in Boangmanalu Village and are currently focusing on pineapple.

Meanwhile, the chairman of the Maju Tani Group in his speech thanked the Community Service Program group team and their entourage for holding this activity as an effort to empower the pineapple

chips that have been produced so far. He said that the current yield of their pineapple plants is quite abundant, but they can only sell fruit and cannot be processed into other products. He really hopes that from the training on making pineapple chips, in the future they will no longer be able to only sell pineapples, but also sell pineapple chips to improve their economy.

The Head of Boangmanalu Village started his speech also thanking the Community Service Program Team for the presence of the Community Partnership Program Team to hold training for its residents. He hoped that the Maju Tani group would use and maintain the help of the pineapple chip processing machine that was handed over by the Community Service program group team. "I hope that with this tool, the Maju Tani Group can use it well to support our economy. This machine does not only belong to the chairman but all members of the farmer group. We agreed to change that, this tool belongs to the farmer group, not just the chairman. So we hope this machine will be used properly. He also promised that this machine will be used properly and successfully and the results will be felt by the community. In the future, the budget will be even greater than the village budget for machines with a larger production capacity. He also hopes that the Maju Tani group will use the Vacuum Frying machine as well as possible in order to increase the income of the members of the farmer group



Fig 1. Opening Speech

After the greeting is complete, it is followed by signing the document for the delivery of the Vacuum Frying machine to partners. In addition to the Vacuum Frying machine, there is also the submission of documents, namely Job Description documents and the Organizational Structure of the Maju Tani Group which have been prepared by the Community Service team. The signing of the document was carried out by the Chair of the Community Service Program and the Chair of the Maju Tani Grup.



Fig 2. Signing of the Tool Document Submission

After the signing of the document was completed, it was continued with the activity of providing material by the team. The method used by the team at the time of socialization was training and mentoring (practice). During this activity, partners were also explained about what programs were being implemented, the objectives of the activities, the benefits of the activities, and the products that would be produced and have the potential to become superior products, namely pineapple into chips in Boangmanalu Village, Salak District, Pakpak Bharat Regency.

The first material is the importance of packaging design to the success of the product and equip it in the manufacture of packaging design. In this session, participants were given an explanation of the importance of product packaging in the success of a product. Packaging gives a special attraction to the product, so that consumers will be curious about the products offered. The curiosity of consumers will increase to purchase decisions. If consumers are satisfied with the first purchase, then these consumers will

make repeat purchases and even influence others to give the product. Thus, the success of a product begins with presenting attractive packaging for the products we are offering. In this session, participants were also provided with ways to create attractive packaging designs. Tips for making an attractive product packaging design include: choosing the right color. The color in the packaging has its own charm. The next tip is to provide information about the products offered, such as their ingredient and expiration date. After that, participants were accompanied directly to make attractive packaging of pineapple chips. The research entitled *The Effect of Packaging, Halal Labels, P-IRT Permit Labels on Consumer Purchase Decisions of MSMEs fish crackers, found that product packaging greatly influences the purchasing decisions of fish cracker consumers in Rembang Regency [7].* In addition, a study entitled *The Effect of Product Design On Purchasing Decisions and Its Impact On Shopping Goods Consumer Satisfaction found that the Product Design variables have a significant effect on the variables of Purchasing Decisions and Consumer Satisfaction [8].* Therefore, with the improvement of this packaging design, it is expected to increase the sales of Pineapple Chips of the Maju Tani Group.

The next material is about the Vacuum Frying Machine and the procedure for using it. In this session, participants were given an explanation of the engine parts. Then, practice how to use a Vacuum Frying Machine, which is to make pineapples into chips. At that time, the team cut the pineapple fruit, then assisted by the other team member to slice the pineapple into small pieces, then put it into the Vacuum Frying Machine. The participants were very enthusiastic and even scrambled to take turns to see firsthand the use of the Vacuum Frying Machine. In the picture, the participants are very enthusiastic in paying attention to how to fry pineapple chips using a Vacuum Frying Machine. On that occasion, the team also gave participants the opportunity to operate the machine. The participants were also very enthusiastic and couldn't wait to taste the pineapple chips that were fried using the Vacuum Frying Machine. The pineapple chips frying process took 1 hour. While waiting for the results of the pineapple chips, the activity continued with a group lunch. After finishing lunch and the time has been 1 hour, the pineapple chips are ready. The participants couldn't wait to enjoy the pineapple chips.



Fig 3. Training on the Use of a Vacuum Frying Machine

The first opportunity was given to the Village Headman to taste the pineapple chips. The Headman said that the pineapple chips taste very tempting and crunchy. He said he was very surprised that the chips produced were so tasteful without the slightest addition of seasoning. And this is what makes this pineapple chip product unique, without preservatives and without coloring. The pineapple chips produced are real pineapples without any seasoning, not even the slightest salt. But uniquely, by using a Vacuum Frying machine, the resulting pineapple chips taste delicious, tasty, and savory. The head of the Maju Tani Group said that his group was greatly helped by the provision of this Vacuum Frying machine, because the pineapple chips produced tasted good and did not bother like manual production in the past. He said that he was also very pleased with the assistance given to the packaging design and Vacuum Frying machine. He hopes that this activity can be continued next year and hopes to be assisted by a packaging printing machine. Thus, the production of pineapple chips can be increased again. If possible they hope to be provided with a Vacuum Frying machine with a larger production capacity. After that the participants also seemed very enthusiastic about tasting the pineapple chips and they said that the pineapple chips tasted very good.

During the activity, the participants were very enthusiastic and posted photos of packaged pineapple chips on their social media accounts, and it turned out that there were a lot of requests for pineapple chips. However, the requests cannot be served because the manufactured products are still limited. The Vacuum Frying Machine handed over to partners is a machine with a capacity of 1 to 1.5 kg, costing Rp. 18,000,000., Once produced, you can fry 2 medium-sized pineapples and produce about 3 packs of pineapple chips net

50 grams. On this occasion, the team also set a target to produce and market pineapple chips produced using a Vacuum Frying machine in the next 1 month. The service entitled Processing Mango Fruit into Chips Using Vacuum Frying The Sinar Ladang Farmer Group of Bayeman Village in Arjasa District, Situbondo Regency, found that the use of Vacuum Frying machines can increase production yields and incomes of farmers [9]. In addition, service activities have been carried out by [10] in Boyolali District. In this activity, they helped MSMEs in Kopen village to improve the quality and quantity of production and improve business management in the Vegetable Chips business at the Prosperous Peasant Women's Group (KWT). The impact of the activities carried out is the acquisition of more regular management of production time and the provision of machines that help in the production process. Therefore, the use of this Vacuum Frying machine is expected to be able to increase the number of pineapple chips production of the Maju Tani group.

After finishing practicing how to fry pineapple chips using a Vacuum Frying machine, the material continued on organizational governance. This material is a reinforcement so that farmer groups continue to synergize and advance to empower this organization. To empower agricultural products, especially pineapple. In addition, the participants were given directions to remain compact and support. In this session, an animated video of ants that can defeat tigers is also shown. If they are united, even the small groups are not impossible to resist and become victorious. The service entitled Strengthening Governance and Financial Management for Business People in the 'Tiga Ras', one of Lake Toba Tourism Area said that organizational governance training increases the motivation, militancy and consistency of Micro, Small and Medium Enterprise (MSME) businessmen in running their businesses [11]. Thus, it is hoped that with this activity, the members of the Maju Tani group can be more compact in running their pineapple chip business. By understanding organizational governance, it will be useful to increase motivation, militancy and consistency of business actors, in running their business. The team provided a document, namely a Job Description of each administrator and member, and an organizational structure of the Maju Tani Group.

After the last material session was over, it was continued with the closing ceremony. Before the closing, the head of Boangmanalu Village and all participants represented by the head of the Maju Tani group expressed their gratitude to the Community Service team. After that, it was followed by a group photo session.

4. Discussion

All activities starting from the preparation stage to the implementation went smoothly. This activity has resulted a new packaging design of pineapple chips. All activities starting from the preparation stage to the implementation went smoothly.



Fig 4. Pineapple Chips Packaging before and after the Community Service activities.



Fig 5. Vacuum Frying Machine handed over to partners

In addition, the Job Description and Organizational Structure documents given to partners can be seen in the group photo session below.



Fig 6. Closing Documentation

5. Conclusion

All activities starting from the preparation to the implementation went smoothly. Nevertheless, this activity is inseparable from obstacles. The obstacles experienced by the team in the implementation of activities are related to the production and yield of pineapple chips. The taste of pineapple chips fried by Vacuum Frying machine is very crispy, but the taste of the chips depends on the original taste of pineapple. If the pineapple fruit is basically sweet, then the pineapple chips produced are very sweet, crispy, taste mixed with honey (said one of the participants of the devotion). But if the pineapple tastes sour, then the chips produced are also sour. So far, the solution carried out by the team is to choose the best pineapple to be used as pineapple chips. It is undeniable that the pineapple taste of Pakpak Bharat has a sweeter taste compared to pineapple from other regions, and the size of the fruit is relatively large. Thus Maju Tani pineapple chips are really the empowerment of their own agricultural products because the pineapple used must be Pakpak Bharat pineapple in order to maintain the integrity of the pineapple chips flavor.

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