

Kreativitas Berdaya: Improving Production Quality and Utilization of Cassava Waste in Cassava Chips UMKM in Mijen District, Semarang

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Abstract

Community service in cassava chips UMKM (stands for Micro, Small, and Medium Enterprises (MSME) in Bahasa Indonesia) in Mijen District, Semarang City, aims to increase the capacity of UMKM in marketing their products effectively and empowering local communities in utilizing cassava waste into value-added products. Through a series of training and mentoring activities, this service aims to increase sales of cassava chips products, increase UMKM income, and expand market reach. The methods used in this service include organizing marketing and promotion training for cassava chips UMKM actors, as well as direct assistance in implementing effective marketing strategies. The training will cover various aspects of marketing, including identifying target markets, online and offline promotion techniques, sales management, and creating the right branding strategy. In addition, assistance will be carried out directly in the field to help UMKM implement the marketing strategies that have been learned in a practical context. With the training and mentoring provided, it is hoped that cassava chips UMKM can improve their expertise in marketing products, increase product competitiveness in the market, and significantly increase their income. In addition, through assistance in utilizing cassava waste, it is also hoped that there will be a reduction in waste in the surrounding environment and the creation of value-added products from the waste. The expected results of this service are an increase in sales of cassava chips products after the implementation of an effective marketing strategy, an increase in UMKM income, and an increase in public awareness of the importance of sustainable waste management. The long-term impacts include the creation of new jobs, increasing community welfare, and reducing the negative impact of waste on the environment. Thus, service in cassava chips UMKM is not only aimed at improving the skills and income of business actors, but also to empower the community as a whole and increase awareness of the importance of effective waste management and marketing in achieving sustainable development.

Keywords: *UMKM; cassava; chips; marketing; packaging*



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A. INTRODUCTION

Mijen District, an area in Central Java Province, Indonesia, has enormous agricultural potential. One of the leading commodities that thrives in this area is cassava. Cassava is a plant that is easy to grow and has high economic value. However, despite its great potential, the utilization of cassava in Mijen District is still limited to sales as a raw material. The cassava processing industry, especially the production of cassava chips, has not developed significantly in this area. Various factors are the causes, including lack of access to efficient production technology, lack of knowledge and skills in processing cassava into value-added products, and obstacles in marketing and distribution.

Cassava plantations in Mijen, Semarang, (**Figure 1**) are an integral part of agricultural activities in the area. Mijen is a sub-district located in Semarang Regency, Central Java, Indonesia. In this sub-district, as in other areas in Central Java, agriculture is one of the main sectors in the community's economy. Cassava plantations in Mijen are generally spread across agricultural lands around the villages in the sub-district. Cassava thrives in tropical climates, and the Mijen region with its ample rainfall and fertile soil creates ideal conditions for cassava growth. Farmers in Mijen generally grow cassava either as a main crop or as an intercrop among other crops. They use both traditional and modern farming methods in managing their cassava plantations, depending on the conditions and resources available. Cassava harvests from plantations in Mijen are generally used for various purposes, including as raw materials for the food industry, animal feed, and also for household consumption. Cassava is processed into various processed products, such as cassava flour, cassava chips, or traditional foods such as gethuk.



Figure 1. Cassava Plantation

Community service in the food sector involves the transformation of cassava into various value-added food products. This includes the development of various processed cassava products such as chips, cassava chips, cassava flour, cassava dodol, and so on. This process involves farmers in planting quality cassava, processing cassava into ready-to-eat food products, and distributing these products to local markets and possibly wider markets. Thus, community service in the food sector not only increases the added value of cassava as a primary commodity, but also opens up new opportunities for the local economy and increases the availability of quality food for the community. In addition, the fairly good nutritional value of cassava can be one of the good food raw materials.

Cassava chips are one of the popular snack products, made from thin slices of cassava that are fried until crispy (Tamburaka et al., 2022). As a service, the production of cassava chips can be one of the activities that helps develop the local economy, improves community skills in processing cassava, and provides business opportunities for the community in the area (Shodiqin et al., 2022). In this context, the development of cassava chip production in Mijen District with a sustainable approach is important. This approach includes the application of environmentally friendly technologies in the production process, such as efficient waste management, as well as empowering local communities through training and mentoring in business management, production skills, marketing, and food safety. By implementing this sustainable approach, it is hoped that the cassava chips industry in Mijen District can grow significantly. This will not only create new economic opportunities for the local community, but will also increase the added value of local cassava, reduce dependence on the sale of raw materials, and help maintain environmental sustainability in the region.

Problem Solution

To overcome the problems in cassava chip production in Mijen, Semarang, a series of integrated steps and solutions are needed. The following are some solutions that can be applied:

First, it is necessary to increase access for farmers and cassava chip producers to more modern and efficient production technology (Alfarizi & Zalika, 2023; Mulyawan et al., 2019). This includes the introduction and training in the use of cassava processing machines that can increase productivity and efficiency of the production process (Agustiar, 2011). By utilizing modern technology, such as automatic cassava peeling and slicing machines, the cassava chip production process can be faster and more efficient, thereby increasing production capacity and the quality of the final product (Samori et al., 2015).

Second, it is necessary to increase skills and knowledge in processing cassava into quality cassava chips (Fajrah & Sumantika, 2022; Umar, 2022). Training and technical assistance for farmers and producers in terms of proper cassava peeling, slicing, and frying techniques will greatly help improve the quality and competitiveness of cassava chip products from Mijen (Terasne et al., 2021). In addition, training on good production practices, hygiene, and food safety is also important to ensure that the cassava chips produced are safe for consumption and meet applicable quality standards (Herawati et al., 2019; Hajar, 2021).

Third, a more effective marketing strategy needs to be implemented to increase market access for cassava chips from Mijen. This includes the development of strong branding, creative and targeted promotional strategies, and market expansion through online and offline platforms (Sardjan, 2023; Widiati, 2020). By expanding market reach and increasing product visibility, it is hoped that demand for local cassava chips will increase, thereby providing additional impetus for the growth of this industry (Narendra et al., 2021).

Fourth, collaboration between various stakeholders, including farmers, producers, local governments, research institutions, and educational institutions, needs to be improved (Halim, 2020). This collaboration can include the exchange of knowledge and information, sharing best practices, and organizing joint capacity building and training programs. By actively collaborating, various parties can mutually support and strengthen the cassava chips industry in Mijen, thereby creating a more productive and sustainable ecosystem (Widiati, 2020; Azizah et al., 2023).

Fifth, environmental sustainability aspects also need to be considered in the production of cassava chips. This includes efficient waste management, environmentally friendly energy use, and ecologically sustainable production practices (Pratiwi, 2018). By implementing sustainability principles in cassava chip production, it will not only help protect the environment but also create a more positive product image in the eyes of consumers (Febriyanti et al., 2023).

By implementing these solutions in an integrated manner, it is hoped that various problems faced in cassava chip production in Mijen, Semarang can be overcome. With strong support from various parties, the cassava chip industry can continue to grow and provide economic and social benefits to the local community.

B. METHOD

The method of implementing community service in the production of cassava chips in Mijen, Semarang, can be done through a series of structured and directed steps, involving collaboration between various stakeholders. Here are some methods that can be applied:

1. Identification of Problems and Needs: The first step is to identify the problems and needs faced by cassava chip farmers and producers in Mijen. This can be done through field surveys, interviews, and group discussions with various stakeholders. Identification of these problems will be the basis for designing effective and relevant community service programs.
2. Community Service Program Planning: Based on the results of problem identification, detailed community service program planning is needed. This program must include clear objectives, target participants, activities to be carried out, and evaluation and monitoring methods. It is also important to involve various related parties, including farmers, producers, local governments, research institutions, and educational institutions.
3. Technical Training and Mentoring: One of the main components of the community service program is the provision of technical training for cassava chip farmers and producers. This training can cover various aspects, such as good planting techniques, processing cassava into quality chips, business management, and marketing. In addition, mentoring is also needed to help farmers and producers apply the skills they have learned in their daily practices.
4. Providing Access to Technology and Production Facilities: As part of the community service program, it is important to provide access to the necessary technology and production facilities, such as cassava peeling and slicing machines, drying machines, and automatic packaging machines. These production facilities can be provided through assistance programs or cooperation with related parties.
5. Monitoring and Evaluation: During the implementation of the community service program, periodic monitoring and evaluation are needed to evaluate the progress and effectiveness of the program. This can be done through surveys, interviews, and evaluation discussions with participants and other stakeholders. The results of this evaluation can be used to

identify problems and challenges that may arise and determine the necessary corrective steps.

6. Partnership and Collaboration Development: During the implementation of the community service program, it is important to build strong partnerships and collaborations between various stakeholders. These include farmers, local governments, research institutions, educational institutions, and the private sector. This collaboration will strengthen efforts to improve the production and quality of cassava chips and open up new opportunities for the development of a sustainable cassava chip industry.

By implementing these methods in an integrated and sustainable manner, it is hoped that it can increase the production and quality of cassava chips in Mijen, Semarang, as well as provide economic and social benefits for the local community (**Figure 2**).

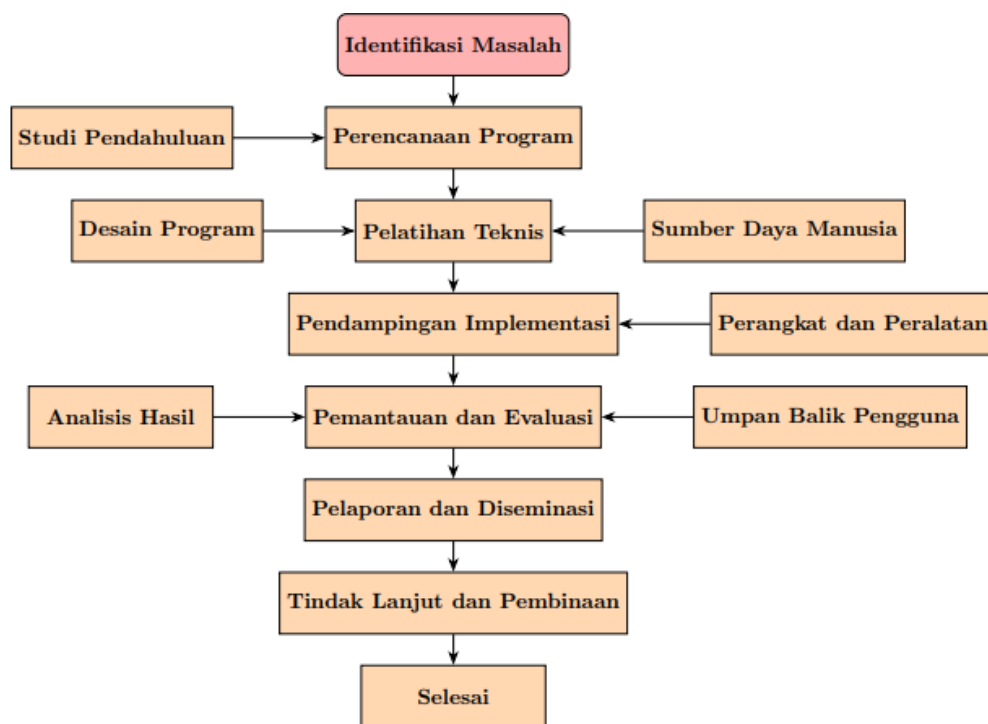


Figure 2. Community Service Activity Scheme

C. RESULT AND DISCUSSION

Community Service Activities

In the community service program implemented at the AA cassava processing UMKM in Mijen District, Semarang, our team has successfully carried out several activities designed to empower the community in the production of cassava chips. This program began with socialization to the community regarding the economic potential of cassava as a raw material for chips. We also provided training to participants regarding cassava processing techniques, starting from the peeling, cutting, to frying stages correctly to produce good quality chips.

In addition, we assist community groups in understanding simple business management, including attractive packaging methods and product marketing strategies. In the early stages, several groups have been able to produce cassava chips with various flavors, such as original, spicy, and cheese. These products

were then marketed around the village and several local shops, with positive responses from consumers.

Until now, the challenges faced are the consistency of product quality and competitive pricing. Our team continues to provide assistance to overcome these problems, with a focus on improving technical skills and business management. Overall, this program has shown significant progress, with the community becoming more skilled and confident in developing their cassava chip business. We will continue to monitor developments and provide the necessary support to ensure the sustainability of this effort.



Figure 1. Community Service Activities for AA UMKM Cassava Processing

As part of the community empowerment program in cassava chips production at UMKM AA, Mijen District, Semarang, our team has carried out packaging activities using vacuum technology for cassava chips products. This vacuum packaging aims to extend the shelf life of the product, maintain crispiness, and ensure that the product remains hygienic during distribution and storage.

This activity began with socialization to the participants regarding the benefits and importance of vacuum packaging, especially in maintaining product quality in an increasingly competitive market. Furthermore, our team provided practical training on how to use a vacuum machine. Participants were introduced to how to put chips into special plastic, how to operate a vacuum machine, and how to seal the packaging properly. After several training sessions, the participants successfully mastered this vacuum packaging technique. The final results of the packaged products showed a significant increase in quality. Chips packaged using this vacuum technique are not only more durable but also remain crispy and delicious even when stored for a longer time.

In addition to technical training, we also discussed marketing and branding aspects. Products packaged with vacuum have a higher selling value and look more professional, making them more easily accepted by a wider market, including supermarkets and modern shops. In several marketing trials, cassava chips with vacuum packaging received a positive response from consumers. This activity not only improves product quality but also provides added value to cassava chips produced by the community, so that they can compete in a larger market. With vacuum packaging, it is hoped that this product can open up wider and more sustainable business opportunities for rural communities.



Figure 2. Community Service Activities

Economic Impact

Improving the quality of production in cassava chips UMKM plays an important role in strengthening the economic sector, especially for small and medium enterprises. By focusing on improving quality, UMKM can produce cassava chips that are more competitive in the market, both in terms of taste, texture, and product durability. This will open access to a wider market, not only locally but also nationally and internationally, so that sales volume increases. When the product is of high quality, UMKM has the opportunity to increase the selling price, which will directly increase business income. In addition, superior products tend to gain consumer trust, so that they can increase market loyalty.

The use of more efficient technology in the production process also has an impact on reducing operational costs. For example, automatic frying machines or more precise cassava cutting tools can reduce the use of energy, raw materials, and production time. This efficiency will reduce overall production costs, thereby increasing the profit margin of UMKM. The implementation of a better quality control system also ensures that the products produced are consistent, so that they can meet higher market standards. The use of cassava waste, such as skin and pulp, can be a new innovation that supports a circular economy. The waste, which was previously just thrown away, can now be processed into derivative products that have economic value, such as animal feed, organic fertilizer, or even alternative fuels (bioenergy). This product diversification not only reduces the environmental impact of production waste, but also opens up new sources of income for UMKM. The processing of cassava waste can create new jobs and improve the welfare of the surrounding community. In addition to providing direct benefits for UMKM, efforts to improve production quality and waste utilization also have a long-term impact on the local economy. With the increase in UMKM income, the purchasing power of the local community can also increase, creating a multiplier effect in other economic sectors. Ultimately, this production quality improvement program not only contributes to the economic growth of UMKM, but also strengthens the national economy by increasing the competitiveness of local products in the global market and encouraging business sustainability through environmentally friendly innovation.

Social Impact

Improving the quality of production and utilization of cassava waste in cassava chips UMKM has a significant social impact, especially for the surrounding community. First, this program contributes to job creation. With the increase in production scale, UMKM will need more workers, both for the production process, distribution, and waste utilization. This provides job opportunities for local communities, especially in rural areas, who often have limited access to formal employment. Increasing local income from this sector will have an impact on improving their welfare and standard of living. Second, technology and management training provided to UMKM also improves the skills and capacity of human resources in the community. The communities involved will gain new knowledge related to more efficient production techniques, waste management, and more modern marketing strategies. This will strengthen the competitiveness of the workforce in the area and increase the self-confidence and innovation capabilities of UMKM actors. The utilization of cassava waste also provides other social benefits, namely in terms of protecting the environment. Good waste management can reduce environmental pollution that previously occurred due to indiscriminate waste disposal. For example, cassava skin and pulp processed into animal feed or organic fertilizer not only reduces waste, but also helps the local agricultural and livestock sectors. Thus, environmental sustainability will be maintained, which in turn supports a healthier and more sustainable life for the surrounding community.

In terms of social empowerment, this program also strengthens social cohesion within the community. Cooperation between UMKM, communities, and various other parties, such as local governments or educational institutions, in training and implementing new technologies creates a positive culture of mutual cooperation. Active community involvement in the production process and waste management creates a sense of ownership and pride in local products, which ultimately strengthens the identity of the community. Overall, the social impact of improving the quality of production and utilization of cassava waste in cassava chip UMKM is not only on improving the economy, but also on strengthening communities, preserving the environment, improving community skills, and improving general welfare.

Environmental Impact

Improving the quality of production and utilization of cassava waste in cassava chips UMKM has a significant positive impact on the environment. One of the main impacts is reducing waste and pollution. Cassava waste, such as skin and pulp, which were previously disposed of carelessly can cause environmental problems, such as soil and water pollution. By utilizing this waste for animal feed, organic fertilizer, or alternative fuel, the volume of waste disposed of into the environment is drastically reduced. This helps reduce the burden of pollution and maintains the cleanliness of the environment around the production site.

In addition, the utilization of cassava waste also supports the principle of a circular economy, where resources are used optimally and waste is processed into new, useful products. This means that cassava chips UMKM not only produce primary products, but also minimize negative impacts on the environment by recycling materials that are usually wasted. The use of more environmentally friendly production technologies, such as machines that are more efficient in using energy and water, also reduces the environmental footprint of the production process itself.

Overall, better waste management and the use of environmentally friendly technologies in cassava chips production not only reduce negative impacts on the environment, but also create a cleaner and healthier environment for the surrounding community. This contributes to environmental sustainability and supports the preservation of natural resources for future generations.

D. CONCLUSION

The community service program in cassava chips production in Mijen District, Semarang, has shown positive results in enhancing MSME capacity, improving product quality, and utilizing cassava waste effectively. Through structured training and mentoring, local MSMEs have successfully adopted more efficient production technologies, enhanced their marketing skills, and implemented more attractive branding strategies. The economic impact of this program is evident in the increased income of MSMEs and the expansion of market access, both locally and nationally. Additionally, there have been significant social improvements, including enhanced community skills, new job opportunities, and increased awareness of sustainable business management. From an environmental perspective, this program has successfully reduced cassava waste by transforming it into value-added products such as animal feed and organic fertilizer, supporting the principles of a circular economy. The sustainability of this program relies heavily on strong collaboration between MSMEs, academics, government agencies, and the local community. With a holistic and sustainable approach, the cassava chips industry in Mijen has the potential to become a leading sector that not only improves community welfare but also contributes to regional economic development in a sustainable manner.

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