

Sociotechnopreneurship As An Alternative For Community Empowerment In Improving The Economy Of Sugar Palm Farmers In Lonuo Village Gorontalo Province

Sosioteknopreneurship Sebagai Alternatif Pemberdayaan Masyarakat Dalam Peningkatan Ekonomi Petani Aren Desa Lonuo Provinsi Gorontalo

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Abstract

Nira juice has the potential for making bioethanol which is industrially very supportive and has high value prospects from an economic perspective which can become the main livelihood of the Lonuo village community so that the bioethanol center is a solution to this problem, because the production results can be used to make alcohol which is used for the cosmetics industry. , medicines The method of implementing this program is mentoring through social education activities aimed at providing social strengthening for the sugar palm farming community by providing social motivation Sociotechnopreneurship. Sociotechnopreneurship social motivation activities provide knowledge and insight to the people of Lonuo village to carry out entrepreneurship in turning palm sap into bioethanol products with the awareness that challenges need to be faced by developing ideas, having the ability to create something new, and even being able to escape from the habit of making palm sap into minimum illegal products are prohibited. Through this activity, there was an increase in the insight of the palm farmer participants regarding socio-technopreneurship in managing palm sap.

Abstrak

Air nira merupakan potensi untuk pembuatan bioethanol yang secara industri sangat mendukung dan memiliki prospek *value* tinggi dari sisi ekonomi yang bisa menjadi mata pencaharian utama masyarakat desa Lonuo sehingga sentra bioethanol merupakan pemecahan masalah tersebut, karena hasil produksi dapat dimanfaatkan menjadi Alkohol yang digunakan untuk keperluan industri kosmetik, obat-obatan Metode pelaksanaan program ini adalah pendampingan melalui kegiatan edukasi sosial bertujuan untuk memberikan penguatan sosial bagi masyarakat petani aren dengan memberikan motivasi sosial sosioteknopreneurship. kegiatan motivasi sosial sosioteknopreneurship memberikan pengetahuan dan wawasan kepada masyarakat desa Lonuo untuk melakukan berwirausaha menjadikan air nira aren menjadi produk bioethanol dengan kesadaran bahwa tantangan perlu dihadapi dengan mengembangkan ide/gagasan, memiliki kemampuan menciptakan sesuatu yang baru, bahkan bisa lepas dari kebiasaan menjadikan nira aren menjadi produk minimal illegal yang dilarang. Melalui kegiatan ini, terjadi peningkatan wawasan peserta petani aren terkait sosioteknopreneurship dalam mengelola nira aren.

Keywords: Sociotechnopreneurship; Sugar Palm Farmers

1. Introduction

Bone Bolango Regency contributes 98.92% of sugar palm production and there is a sugar palm industry center in Lonuo Village which was formed by the Department of Industry and Trade (Disperindag Bone Bolango Regency). The number of people farming sugar palm is +532 people and only produces sap as a traditional high-alcoholic drink, giving rise to problems of security instability triggered by high-alcoholic drinks (Bohito, Sagner, ballo) which are illegal drinks. On the one hand, sap water has the potential to produce bioethanol, which industrially is very

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supportive and has the prospect of high value from an economic perspective, which can become the main livelihood of the Lonuo village community, so the bioethanol center is a solution to this problem, because the production results can be used to make alcohol which is used for other purposes. cosmetics and medicines industry (Irawan 2012; Dmpeipen, 2015; Hidayat 2018).

The problems faced by the community are 1) Lack of community skills in processing sap water into bioethanol as required; 2) Lack of public understanding of the benefits of bioethanol from sap water as a productive product for health and others; 3) Lack of knowledge of the science and technology of processing sap water into bioethanol; 4) People still use simple distillation methods so that the results obtained do not meet the required quality standards; 5) Lack of knowledge of marketing strategies to promote bioethanol products; 6) There is no motivation and creativity in the community to process sap water into bioethanol products; 7) There is no strengthening of sociopreneurs for the community to create processed sap products that have economic value.

These problems have a big impact on the economic life of the community because people only take palm sap and sell it to collectors at a cheaper price and there is no creation of sociopreneurs among palm farmers and there is security inconvenience because the palm juice is only made into illegal liquor. The problems faced by this community have been around for years and have had a huge impact on people's lives, both economically and socially. The methods/methods of handling so far and their weaknesses so that the alternative solutions offered will provide better problem solution results. The current method is 1) Fermentation using jerry cans with a capacity of up to 25 liters for 5 days; 2) Distillation / distillation still uses simple equipment: Using bamboo as a container to catch steam with a length of 5 - 7 meters. Heating using wood with a maximum drum container of 200 liters per heating with the tool design still being manual; 3) Sales of sap water collected by collectors according to orders at minimum prices and carried out illegally; 4) People work independently in a traditional way (Horman, 2019; Wowor, 2020).

The weaknesses are 1) The less than optimal bioethanol material produced is caused by the pH temperature, the exponential growth of bacteria; 2) Alcohol content is not yet maximum, only 20-40% while the desired level is 80%; 3) The temperature is not constant, resulting in levels that do not meet quality standards; 4) Burning for heating does not meet Occupational Health and Safety (K3) requirements; 5) The equipment is less effective, resulting in process delays and a lot of material being wasted (loss); 6) Distillation is carried out repeatedly until a yield of 60-80% is obtained; 7) There is no sales permit and there is no market available according to market prices; 8) The community has not been trained and only does it according to their wishes, so urgent solutions are needed to help the sugar palm farming community to improve science and technology, improve the economic and social level of the community (Resolving Problems in the Community). So-BioTech innovation through the MF program will provide benefits for universities, namely the application of science through the tridharma which has an impact on increasing IKU outcomes, increasing the percentage of students involved in the MBKM program, increasing PT rankings. and the benefits for partners are 1) Realizing the strengthening of the community's economy through palm-based IKM; 2) increase in local original income (PAD); 3) Creation of employment opportunities for rural communities (Suci, 2020, Rembang, 2020).

The innovations offered include their advantages and uniqueness (value proposition). Viewed from the 3 (three) components of the problem, they are 1) Social: Approaching society is carried out using mentalistic and conditional social methods. Mentalistic methods through training to the community so that a positive mindset is formed by the community regarding the use of sap water into bioethanol (Bioenergy) which encourages community groups to be more productive in managing sap from raw material extraction to marketing. The conditional method is carried out by demonstrating how to process sap into bioethanol in accordance with market standards and needs, so that people are more professional in processing sap. This is done to encourage community groups (Sociotechnopreneurship) to be more productive in managing sap from taking raw materials to marketing; 2) Technology: In an effort to produce quality bioethanol according to market needs, sap water processing technology is needed. The distillation model used is the Continued Staged Distillation (DBC) model as in the picture beside. The DBC model processes sap water in stages starting from heating the sap water which produces 20-40% alcohol, then the heating results are distilled again to produce 70-80% alcohol. To control the process and quality of the alcohol produced, the distillation section is equipped with a thermocouple and alcohol meter. Apart from that, to maintain the purity of the bioethanol products, the materials used in making the distillation are stainless steel; 3) Economics and Marketing: Utilizing technological advances in marketing products, with the formation of digital marketing which provides consumer convenience in accessing and selecting products.

Analysis of production costs and financial reporting of bioethanol industry businesses based on their advantages, namely 1) The fermentation process is carried out systematically and measurably, producing good fermentation; 2)

The distillation process produces bioethanol that is in accordance with the wishes, there is no loss of reactants and products, and the use of Advanced Multilevel Distillation System Technology obtains the purity value of the bioethanol produced; 3) Obtaining a clear market, lots of digital marketing promotions, and supply and demand; 4) increasing community skills in processing palm sap into bioethanol, increasing farmers' knowledge about Advanced Multilevel Distillation System technology, as well as skills in determining work attitudes.

2. Methods

The method for implementing this program is mentoring through social education activities aimed at providing social strengthening for the sugar palm farming community by providing social motivation: sociotechnopreneurship. This activity was carried out on Saturday, September 30 2023 at the Bioethanol Center located in Lonuo Village, Tilongkabila District, Bone Bolango Regency. This activity was attended by 30 participants, all of whom were sugar palm sap farmers from Lonuo village. Apart from that, this activity was attended by 9 lecturers and 28 students from Gorontalo State University as well as Lonuo village officials and the head of the Industry and Trade service (Disperindag, Bone Bolango Regency). This activity began with the opening of the event, giving a speech by the head of the tokoreka team, the head of Lonuo village and the Head of the Industry and Trade Service, providing material by resource person Ms. Hasdiana, S.Pd., M.Sn. Next was a question and answer session and discussion, after that the closing activity.

The stages of this socio-technopreneurship social motivation activity are 1) observation stage: carried out in order to collect data on sugar palm palm farmers in Lonuo village as well as conducting a survey of the location of the sugar palm palm farmer's village; 2) preparation stage: this stage is carried out in order to prepare tools and materials that will be used in the activity, determine resource persons and prepare invitations for resource persons, prepare initial assessment instruments for activity participants, prepare the activity location and hold meetings with the village and community and industry services and Trade related matters that need to be prepared in carrying out this activity; 3) implementation stage: this activity begins by providing an initial assessment in the form of an interview test to participants to determine their initial knowledge about palm sap, the benefits of palm sap and bioethanol products and their derivatives. Apart from that, providing material by resource persons, questions and answers and discussions; 4) Evaluation Stage: by providing a final assessment in the form of feedback and responses as well as testimonials after giving the material to determine the difference in participants' knowledge before being given the material and after giving the material. An overview of the stages of socio-technopreneurship social motivation activities can be seen in the Figure 1.

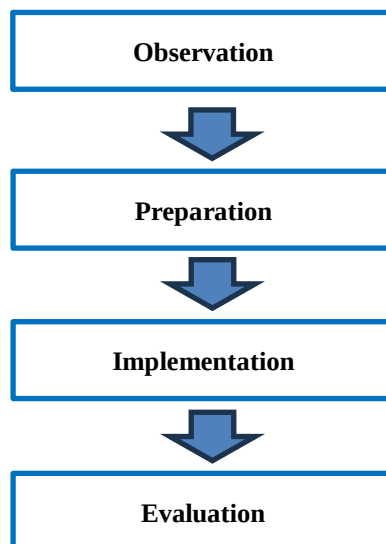


Figure 1. Stages of Implementing Activities

3. Result and Discussion

Sociopreneurship as an economic driver, provides business opportunities, business views and practical aspects in solving social and economic problems. Apart from improving macroeconomics, Sociotechnopreneurship is a solution to improving the national economy. Sociotechnopreneurship can be interpreted simply as building a business based on social activities. In contrast to other types of entrepreneurship, which emphasize more on differences in the products or services offered, Sociotechnopreneurship is more focused on community empowerment (Hartati, 2021). Sociotechnopreneurship is an entrepreneurial work system that is unique in combining business goals with community welfare goals (Anas, 2019). This entrepreneurial model has begun to be embraced by young people. Apart from having more social value, this entrepreneurial model also presents challenges in how to manage the diversity of human resources around the place of business. The Sociotechnopreneurship management system starts with one person having an idea and becoming the leader of the business he is running, with a more family nature, a comfortable and friendly work rhythm. Sociotechnopreneurship is a strategic way to create a prosperous society with youth participation. Imagine that in each region there are only 10 people who are pioneering entrepreneurship with the concept of Sociotechnopreneurship.

Various businesses can be pursued as long as you have strong determination. Motivation for social entrepreneurship is certainly needed in carrying out entrepreneurial activities. A business that has long been carried out by palm farmers in Lonuo Village is to make illegal drinks made from palm sap. Even though sugar palm sap has the potential to become several high-value products. Palm trees are plants that have long been known as a source of sugar contained in tap water (nira). The sugar content of palm sap ranges from 6-16%, making this plant have extraordinary potential to be used as a source of raw material for making ethanol. Sweet sap is obtained from sugar palm by tapping. If left alone, the sap will ferment itself (having *Saccharomyces tuac* yeast cells) and turn into palm wine with a high alcohol content. Utilizing ethanol as fuel has the advantage of having a high ethanol oxygen content (99.5%) thus producing clean fuel. The fuel produced is environmentally friendly because it is carbon monoxide gas which is released 19-25% lower than BBM (fuel oil). Activities using renewable energy do not contribute to the collection of carbon dioxide in the atmosphere (Manurung, 2016).

The process of testing the bioethanol distillation equipment from palm sap is carried out in three stages, namely pasteurization, fermentation and distillation. Pasteurization is carried out by heating sap water for 10 minutes at a temperature of 50-60°C. After the pasteurization process, the sap water is fermented for 72 hours, and then distilled at a temperature of 78-80°C (Yunus, 2020). Among the parameters that need to be considered are the heating temperature, tube closure, and the addition of additives in the distillation process. The heating temperature greatly influences the combustion time. The more stable the heating temperature, the better the evaporation process, maximum temperature 70°C to 76°C. Apart from that, the tube cover must be installed properly to prevent liquid/vapor from escaping through the mouth of the tube due to the lid not being tight. For a higher level of purity, you can use materials such as zeolite which functions as an adsorbent to absorb water vapor so that the bioethanol produced has a higher content and the results are more than what has been made (Ariyani, 2015; Akhir, 2015; Tanaiyo, 2022).

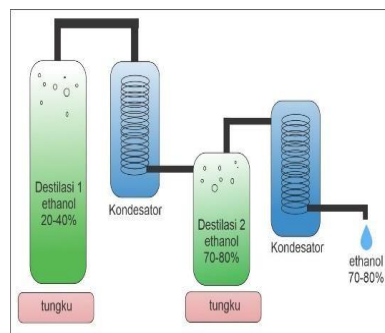


Figure 2. Distillation Process

Palm sap water can be a bioethanol product with high value and can be an option for the people of Lonuo village in addition to making palm sap produce minimally alcoholic and brown sugar. Through this social motivational socio-technopreneurship activity, we will make a contribution to the Lonuo village community. Through this activity, the participants who attended gave a very positive response and were happy with the provision of material that they previously did not understand. Participants provided testimonials regarding the implementation of this socio-

technopreneurship social motivation activity in the form of gratitude and hoped to receive more in-depth guidance and requested that training be carried out regarding the use of palm sap into bioethanol products. The participants who attended also gave an idea that they were increasingly understanding about the use of palm sap into bioethanol products from the initial condition that they did not have in-depth knowledge regarding how to make palm sap water into a high-value product such as bioethanol. This socio-technopreneurship social motivation activity went well and smoothly with enthusiasm from the participants. An overview of socio-technopreneurship social motivation educational activities carried out at the Bioethanol Center in Lonuo Village can be seen in Figure 3.



Figure 3. Implementation of Sociotechnopreneurship

The absorption of large workforce from the MSME sector will experience a rapid increase. Social entrepreneurship or Sociotechnopreneurship also has a big challenge, namely how the ideas offered can be accepted by society (Chasanah, 2021). Sociotechnopreneurship plays a role in providing employment opportunities for job seekers, it is hoped that the unemployment rate will be reduced. Sociotechnopreneurship as an alternative for community empowerment and poverty alleviation needs to receive attention and support from all parties considering that the potential of Indonesian society is so great and the support of natural resources, culture will become a masterpiece of very high value. Through Sociotechnopreneurship, new job opportunities will emerge with increased creativity and social entrepreneurship or Sociotechnopreneurship actors (Utami, 2017).

4. Conclusion

The conclusion obtained is that socio-technopreneurship social motivation activities provide knowledge and insight to the people of Lonuo village to carry out entrepreneurship in turning sugar palm juice into a bioethanol product with the awareness that challenges need to be faced by developing ideas, having the ability to create something new, and even being able to break away from habits. making palm sap into a minimum illegal product that is prohibited. Through this activity, there was an increase in the insight of the palm farmer participants regarding socio-technopreneurship in managing palm sap.

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