

Empowerment of Robusta Coffee Farmers to Develop Entrepreneurs in Aceh Barat Based on Technology Application

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ABSTRACT

Background: The problems of robusta coffee farmer in Aceh Barat Regency are lack of insight into the downstream potential of robusta coffee, lack of business development ideas and farmer do not understand making financial reports, legality and business organizational systems. For this reason, assistance are needed to coffee farmers so that they develop their business and increase their income.

Contribution: Increasing insight into potential utilization and marketing, entrepreneurial development ideas, business finance.

Method: Community service was held on 11-13 November 2022 at Teuku Umar University. The approach taken is in the form of a process of education, training and mentoring focuses on three stages: (1) Education of potential beneficiaries and development of the Robusta coffee business (2) Assistance in preparing financial reports, business organization systems and technology adoption and (3) Socialization of efficient coffee marketing channels.

Results: The process that goes through each stage is the purchase of red cherries for robusta coffee. There are 3 sub-districts that currently can become suppliers of robusta coffee in Aceh Barat Regency, namely Woyla Induk District, Samatiga District and Meureubo District. The three districts have taken samples and carried out the drying process to become green beans. After purchasing the fruit, the next stage is the process of drying, roasting, grinding and packaging.

Conclusion: The participants who were accompanied were able to apply coffee powder packaging technology at IBT, understand the legality of the robusta coffee business, understand the marketing of the robusta coffee business.

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INTRODUCTION

The coffee industry in Indonesia can be said to be stretching, coffee has now become a trend and a way of life [1]. The proliferate of coffee shops in various regions in Indonesia is an indicator of this [2]. The skyrocketing coffee industry is inseparable from the development of the world coffee industry, which until now has quality coffee commodities that are the target of coffee business actors, both nationally and internationally.

Creating a supportive environment is one of the strategies in agribusiness development [3]. The problem with the coffee industry in Aceh Barat Regency in general is difficulties in downstreaming coffee as a result of a lack of understanding about coffee business development. The coffee farmers in Aceh Barat Regency who are the target of community service do not understand well about the downstream potential of coffee and do not have good entrepreneurial competence. Entrepreneurial competence greatly determines business performance [4,5,6,7]. In addition, assistance by partners is needed to improve performance [8, 9].

The high demand for cafe-grade coffee in Aceh Barat is directly proportional to the growing coffee business in big cities such as Medan and Banda Aceh which is an opportunity for local farmers to get added value instead of having to sell raw coffee beans to middlemen at low prices. This is supported by the sluggish economy in Aceh Barat Regency. Because of this, community service by the team of lecturers is deemed necessary to facilitate training for the coffee farming community in increasing the income of farmers. This training and counseling aims to provide participants with additional insight into the whole series of processes upstream to downstream of the coffee industry which can increase the income of coffee farmers. In the long run farmers can produce, pack and sell quality coffee [10].

Innovation or new discoveries in the form of information, whether in the form of new ideas, actions or objects will cause social change if it spreads in society [11]. These changes will be greatly influenced by how the method and process of technological innovation are disseminated or diffused to the community, especially robusta coffee farmers [12].

The problems faced by Robusta coffee farmers in Aceh Barat Regency are (1) lack of insight into the downstream potential of robusta coffee, (2) lack of business development ideas. (3) Do not understand making financial reports, legality and business organizational systems.

For this reason, assistance and transfer of science and technology are needed to coffee farmers so that they develop their business and increase their income [13]. Product packaging according to current target consumers is still minimal, low product quality and marketing channel management that has not been maximized has resulted in the potential of Robusta coffee in Aceh Barat Regency not being utilized properly. The desire of our partners and us is very high as executors of service in developing the business.

From the problems faced by farmers, the solutions offered are increasing insight into potential utilization and marketing, entrepreneurial development ideas, business finance, legality and business organizational systems and technology adoption. This activity focuses on the downstream part of the agribusiness subsystem where consumers must be given products that have added value so that farmers as producers also get maximum income.

A previous research explained on the growth and trend of the coffee industry in Indonesia, as well as the challenges faced by coffee farmer in Aceh Barat Regency, such as the lack of understanding about coffee business development and entrepreneurial competence [12–14]. However, the previous research did not specifically focus on the downstream potential of robusta coffee, business finance, legality, organizational systems, and technology adoption among coffee farmers in Aceh Barat Regency.

This community service is limited to the specific context of Aceh Barat Regency and focuses on addressing the challenges faced by robusta coffee farmers in this region. It aims to provide assistance and transfer of knowledge to enhance their understanding of the downstream potential of robusta coffee, develop entrepreneurial ideas, improve business finance and organizational systems, and promote technology adoption.

Indeed, this study intends to contribute to the community engagement and economic development in Aceh Barat Regency by empowering coffee farmers. The purpose of this study related to community engagement are:

1. To increase the income of coffee farmer by providing training and counseling on the whole series of processes in the coffee industry, the study aims to equip coffee farmers with the necessary skills and knowledge to produce, pack, and sell quality coffee. This, in turn, can enhance their income and contribute to poverty reduction and economic growth in the community [16].
2. To promote the utilization of the local coffee potential by improving the understanding of the downstream potential of robusta coffee and enhancing business development ideas, the study aims to encourage coffee farmers to add value to their products. This can lead to better market opportunities and higher returns for the farmers, as well as the overall development of the coffee industry in Aceh Barat Regency [17].
3. To facilitate technology adoption, the study recognizes the importance of technology in enhancing productivity and efficiency in the coffee industry. By providing assistance and transfer of science and technology, the study aims to encourage coffee farmers to adopt relevant technologies that can improve their farming practices, processing methods, and product quality [18].

Overall, the study seeks to engage with the community of coffee farmer in Aceh Barat Regency and empower them with the necessary skills, knowledge, and resources to succeed in the coffee business [19].

This study aims to address the challenges faced by Robusta coffee farmers in Aceh Barat Regency, Indonesia, by providing assistance and transfer of knowledge in order to enhance their understanding of the downstream potential of robusta coffee, develop entrepreneurial ideas, improve business finance and organizational systems, and adopt relevant technologies. The focus on the downstream part of the coffee agribusiness subsystem and the emphasis on creating added value for consumers contribute to the novelty of this study. By equipping coffee farmers with the necessary skills and insights, this study seeks to promote the utilization of the local coffee potential, enhance the income of farmers, and contribute to the overall development of the coffee industry in the region.

METHOD

Community service was held on 11-13 November 2022 at Teuku Umar University. The approach taken is in the form of a process of education, training and mentoring focuses on three stages: (1) Education of potential beneficiaries and development of the Robusta coffee business (2) Assistance in preparing financial reports, business organization systems and technology adoption and (3) Socialization of efficient coffee marketing channels.

The downstream potential of robusta coffee in Aceh Barat Regency will be carried out by take the following steps:

1. Assistance and outreach regarding the importance of the downstream potential of Robusta coffee. Activities will be carried out in the form of direct interactive discussions with farmer to

- aim of opening insights into potential.
2. Mapping robusta coffee business ideas in Aceh Barat.
 3. Assistance in the application or adoption of coffee powder packaging technology as a support for the robusta coffee business.



Figure 1. Flow Chart Community Service Method.

RESULTS AND DISCUSSION

1. Financial Management Assistance

Financial management assistance activities are carried out so that the target group understands the calculation of the product to be marketed [10,11]. The process that goes through each stage is the purchase of red cherries for robusta coffee. There are 3 sub-districts that currently can become suppliers of robusta coffee in Aceh Barat Regency, namely Woyla Induk District, Samatiga District and Meureubo District. The three districts have taken samples and carried out the drying process to become green beans. After purchasing the fruit, the next stage is the process of drying, roasting, grinding and packaging. This stage must be passed by the business group so that it can be seen in each process the costs incurred and weight depreciation. Good financial management will produce good business performance [22], this is in accordance with Rahadi's research [23].

2. Assistance for Utilization of Business Potential and Product Marketing

Prior to the mentoring process, the target group often received red coffee and mixed with green. This will obviously spoil the taste of the coffee that will be processed so that in the mentoring process, the target group is given an understanding to make the most of the potential of robusta coffee as much as possible by processing only the red robusta coffee cherries [24]. By only processing red cherries, it will obviously increase costs from the price of the fruit, which was originally around IDR 5,850/kg to IDR 6,700/kg. However, by processing the red fruit, the

taste of the processed coffee will be better so that the price can be increased from before, this is in accordance with Fadri's research which states that [25].

The difference between mixed green fruit before assistance and red fruit after assistance refers to the change in the processing and utilization of coffee cherries by the target group after receiving assistance and mentoring. Figure 1 shows the display of mixed green fruit before assistance and red fruit after assistance

Before the assistance, the target group often received a mixture of red and green coffee cherries. This means that both ripe (red) and unripe (green) cherries were processed together. This practice can negatively affect the taste and quality of the processed coffee. The mixture of red and green cherries can result in inconsistent flavor profiles and lower overall product quality.

However, after receiving assistance and mentoring, the target group is given an understanding of the importance of utilizing the potential of robusta coffee by processing only the red cherries. The assistance aims to educate the farmers on the benefits of focusing on processing ripe cherries, which leads to better coffee flavor and quality.

Therefore, the shift from mixed green fruit to red fruit after assistance signifies a change in the processing approach. The farmers now selectively process only the fully ripe red cherries, avoiding the inclusion of unripe green cherries. This change results in improved taste and quality of the processed coffee, which can lead to higher market value and increased income for the coffee farmers.



Figure 2. Mixed Green Fruit Before Assistance and Red Fruit After Assistance.

3. Entrepreneurial Idea Assistance and Development

In the Assistance process, the target group is given an understanding of the business development process [14, 15, 16]. This development can be carried out through processing or downstream processing which aims to increase interest in buying the product [29]. In this case, there are many complaints from consumers about the processing process that uses tarpaulin and is spread out in an open area. The drying process is very prone to being disturbed by animals such as chickens, ducks, cats and dogs which will affect the cleanliness of the coffee that has been dried in the sun [30]. The solution offered to produce hygienic products is drying using an *ancak*. The random equipment helps ensure that the coffee that is dried is not contaminated and is safe from animal disturbance. This can be one of the steps in the process of developing robusta coffee entrepreneurs in Aceh Barat Regency.

Before the assistance program, the process of drying coffee cherries involved using tarpaulin, which is a large sheet of waterproof material. The cherries were spread out on the tarpaulin in an open area to dry under the sun. However, this method had limitations and posed challenges. (1) Contamination risk, the open area drying process using tarpaulin made the coffee cherries vulnerable to contamination by animals such as chickens, ducks, cats, and dogs. These animals could access the drying area and potentially damage or contaminate the coffee cherries, affecting their quality and hygiene. (2) Inconsistent drying, drying coffee cherries on

tarpaulin in an open area was susceptible to weather conditions such as rain or excessive humidity. These conditions could prolong the drying process or lead to uneven drying, which could negatively impact the quality and flavor of the processed coffee.

To address these limitations, the assistance program introduced a new method of drying coffee cherries using an *ancak*. An *ancak* is a drying apparatus specifically designed for coffee drying. It typically consists of a wooden frame with a wire mesh or netting that allows for proper air circulation.

After the assistance program, the coffee farming actors adopted the use of an *ancak* for drying coffee cherries. This new method offered several advantages: (1) Hygienic drying environment, the *ancak* provided a controlled and hygienic environment for drying coffee cherries. It helped protect the cherries from animal interference, minimizing the risk of contamination and ensuring better hygiene standards. (2) Improved drying consistency, the use of an *ancak* allowed for more consistent drying of the coffee cherries. It provided better airflow around the cherries, enabling more uniform drying and reducing the chances of mold or uneven drying affecting the quality of the coffee.

By transitioning from the tarpaulin drying method to the *ancak* drying method, the assistance program aimed to improve the quality and marketability of the coffee cherries. The *ancak* drying method offered better control over the drying process, leading to enhanced hygiene, consistent drying, and ultimately better-quality coffee, this is in accordance with Rosiana's research [31].

It is important to note that the success of this change in drying method can be evaluated through qualitative assessments, such as farmer feedback on improved drying conditions and the resulting quality of the coffee [32]. Additionally, quantitative measures, such as comparing the number of rejected cherries or cupping scores before and after the adoption of the *ancak* drying method, can provide further insights into the effectiveness of the change in the drying process. The process of drying using a tarpaulin shows in figure 2.



Figure 3. The Process of Dying Using a Tarpaulin Before Assistance and Using an *Ancak* After Assistance.

4. Contribution

The article contributes to new knowledge in the domain of coffee farming and agribusiness in Aceh Barat Regency by addressing specific challenges faced by robusta coffee farmers and providing practical solutions. It introduces three key areas of assistance that contribute to new knowledge and insights:

1. Financial Management Assistance. The article emphasizes the importance of financial management in coffee business performance. By providing financial management assistance, the research helps the target group understand the calculation of costs and

- depreciation throughout the coffee processing stages. This contributes new knowledge on the significance of effective financial management in ensuring good business performance.
2. Assistance for Utilization of Business Potential and Product Marketing. The article highlights the need to maximize the potential of robusta coffee by processing only the red cherries. It addresses the issue of mixing red and green cherries, which can negatively impact the taste of the coffee. By assisting the target group in understanding and implementing the utilization of the business potential of robusta coffee, the research contributes new knowledge on enhancing product quality and increasing market value.
 3. Entrepreneurial Idea Assistance and Development. The article focuses on entrepreneurial idea assistance and development through downstream processing. It addresses consumer complaints regarding the traditional drying process and proposes the use of an *ancak* (a drying apparatus) to ensure hygienic coffee production. This innovative approach contributes new knowledge on improving processing methods and developing robusta coffee entrepreneurs in Aceh Barat Regency.

Overall, the article contributes to new knowledge by providing practical solutions and insights into financial management, business potential utilization, and entrepreneurial development in the context of robusta coffee farming. It offers specific strategies that can enhance the income of farmers, improve product quality, and contribute to the overall development of the coffee industry in Aceh Barat Regency.

The study focuses specifically on the challenges and solutions related to robusta coffee farming actors in Aceh Barat Regency. The findings may not be directly applicable to other regions or coffee varieties, limiting the generalizability of the results.

The study primarily focuses on providing assistance and knowledge transfer to coffee farming actors. However, it does not assess the long-term impact of the interventions on the sustainability and success of the coffee businesses. Further research is needed to evaluate the effectiveness and long-term outcomes of the implemented strategies.

As the study involves assistance and mentoring by the research team, there is a possibility of bias in the data collection and analysis process. Steps should be taken to minimize researcher bias and ensure objectivity in the findings.

CONCLUSION

The participants who were accompanied were able to apply coffee powder packaging technology at IBT, understand the legality of the robusta coffee business, understand the marketing of the robusta coffee business. This study contribute describes a program aimed at assisting a target group in Aceh Barat Regency to develop their robusta coffee business. The program includes financial management assistance to ensure good business performance, utilization of business potential and product marketing assistance to improve the taste and increase the price of the processed coffee, and entrepreneurial idea assistance and development to improve the process of drying the coffee using an *ancak* to produce hygienic products. Through these activities, the program aims to develop robusta coffee entrepreneurs in Aceh Barat Regency and help them succeed in their business.

Further research could explore and investigate the adoption and utilization of advanced technologies and innovative practices in coffee farming and processing. Assessing the impact of technological interventions on productivity, quality, and market access would be crucial for enhancing the competitiveness of coffee farming actors. Future research could investigate the sustainability practices and environmental impact of coffee farming in Aceh Barat Regency. Assessing the adoption of sustainable agricultural practices, such as organic farming or

agroforestry, and analyzing their effects on biodiversity, soil health, and water resources would be valuable for promoting environmentally friendly coffee production. By addressing these limitations and exploring the prospects mentioned above, future research can further enhance our understanding of robusta coffee farming and contribute to the sustainable development of the coffee industry.

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