

## STRENGTHENING AGRIBUSINESS EFFORTS TO IMPROVE THE QUALITY AND SALES VALUE OF COCOA BEANS IN WOMEN FARMERS' GROUPS IN ANTUTAN VILLAGE

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### Abstrak

#### Keywords:

Cocoa Beans, Selling Price, Quality, Strategy.

Antutan village is located in Tanjung Palas, Buhungan Regency, North Kalimantan Province. This village has the potential in developing cocoa and rice plantations. However, most of the land is used for growing cocoa, so the output can improve the economy of Antutan village sustainably. The cocoa cultivation techniques are still done traditionally or manually, starting from peeling, drying, to fermentation techniques. Apart from the traditional cultivation techniques, there are several other issues that can lower the quality and market value of cocoa beans, such as pests and diseases that can attack cocoa plants at any time. The efforts of the women farmers' group in addressing these issues are quite serious, thus they must be carried out with care and precision. Therefore, it is important to maintain the quality of cocoa beans, as it can improve productivity and the selling value of high-quality cocoa beans. This fermentation process plays a very important role in developing the flavor and aroma of cocoa beans, thus enhancing the overall quality of cocoa. The higher price reflects the quality of the fermented cocoa beans, which are highly sought after in the premium chocolate market for their ability to provide a more complex and unique taste in the final product.

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### INTRODUCTION

Cocoa (*Theobroma cacao* L.) is one of the plantation commodities that plays an important role in the national economy of Indonesia, especially in increasing foreign exchange. However, the quality of Indonesian cocoa, particularly the production of cocoa beans from smallholder farms, is still relatively low (Manalu, 2019) in (didi et al, 2024) Some factors that prevent cocoa farmers in Indonesia from fermenting cocoa beans include a lack of understanding regarding post-harvest handling of cocoa beans

among them (Sudjarmoko et al., 2017). The quality of cocoa beans is the main factor that determines the taste, aroma, and characteristics of the resulting chocolate products (Zainuri et al., 2021) in (Iswari, 2023). Therefore, post-harvest management of cocoa, which includes processing and storage practices, plays a crucial role in ensuring high-quality cocoa beans. Moreover, it is important to know the right harvest time to produce superior cocoa beans. If the fruit is harvested when it is not ripe or overripe, it can affect the taste and quality of the cocoa beans, which ultimately impacts the quality of the final product, namely chocolate (Hu et al., 2016) in (Iswari, 2023)

The factors that influence the quality of cocoa beans can be divided into several categories. First, environmental factors such as temperature, humidity, and light intensity can affect the quality of cocoa beans. An excessively high or low temperature can affect the ripening process of cocoa beans, while too much humidity can cause the cocoa beans to rot. Second, post-harvest factors such as drying, grinding, and storage can also affect the quality of cocoa beans. Improper drying can cause the cocoa beans to rot, while inadequate storage can lead to damage to the cocoa beans. Post-harvest handling of cocoa is a series of activities conducted after harvest until dry cocoa beans ready to be processed into various chocolate products, whether food or beverages (Nurhayati et al., 2016). Fermentation of cocoa beans is one of the important stages that must be carried out to produce high-quality chocolate. The success of this process is usually influenced by changes in air temperature during fermentation and the color transition of cocoa bean flakes from purple to brown after undergoing the fermentation and drying stages (Hartuti et al., 2018). This fermentation process aims to develop the distinctive flavor of chocolate (Ginting, 2011) in (Wijanarti et al., 2019)

International cocoa prices have a significant positive influence on the competitiveness of Indonesian cocoa. This is consistent with the law of supply theory, which states that there is a positive relationship between price and the quantity of products offered. When the price of a product increases, the quantity of that product offered by producers also rises. Conversely, if the price of the product decreases, the supply will also decrease. Producers will be motivated to increase their production, considering the potential for greater profits. Thus, it can be concluded that an increase in international cocoa prices will drive an increase in Indonesia's cocoa exports while also enhancing Indonesia's cocoa competitiveness in the global market. Furthermore, the area of cocoa land has a significant negative impact on the competitiveness of Indonesian cocoa. An increase in cocoa land that is not matched by an increase in production and quality of cocoa will result in the produced products not being utilized effectively. Consequently, this may reduce cocoa export numbers, which in turn impacts the decline of Indonesia's cocoa competitiveness in the global market.

Agribusiness comes from the combination of two words, namely 'agri' and 'business.' 'Agri' is taken from the English word 'agricultural,' which means farming, while 'business' refers to commercial ventures in the trade field. Thus, agribusiness can be interpreted as a unity of business activities that encompasses one or all stages in the production, processing, and marketing chains of products related to agriculture in a broader sense. (Soekartawi, 1993) in (Agustina, 2014). Agribusiness includes all activities related to the procurement, processing, distribution, and marketing of products produced by a farming or agro-industrial undertaking, all of which are interconnected. Thus, agribusiness can be understood as an agricultural system consisting of several component sub-systems, namely the sub-system of farming that produces raw materials,

the sub-system for processing agricultural products, and the sub-system for marketing agricultural products. Agribusiness is expected to be the driving force of development in the agricultural sector, playing an important role in regional development activities. Its contribution is expected to support equitable development, economic growth, and national stability. To realize this great hope, it is important to identify and utilize existing potential. Antutan Village is a village located in the Tanjung Palas sub-district, Bulungan Regency, North Kalimantan Province. This village has various geographical conditions, with rolling terrain and several rivers flowing in the area. This geographical state gives Antutan Village great potential in agriculture. The people of Antutan Village carry a rich culture and have distinctive traditions. Most of the village's population works as farmers, and agricultural products such as cocoa, rice, and vegetables are their main sources of livelihood. Data from the survey conducted by the author shows that the majority of the residents of Antutan Village work as farmers. To advance Antutan Village, several strategies are needed such as improving the quality of human resources through training and education, developing the agricultural sector, especially rice and cocoa, and lastly, increasing the community's understanding of the importance of marketing their production results.

## **METHOD**

This research was conducted as part of a community service program in Antutan Village, focusing on outreach to strengthen agribusiness as a step to improve the quality and selling value of cocoa beans among women farmer groups in the village. This activity aims to enhance farmers' knowledge and skills in managing their businesses effectively and efficiently, designing marketing and sales strategies for agricultural products, improving crop yields and their quality, as well as adopting the latest agricultural technologies and innovations.

### **Implementation of Community**

ServiceOn Wednesday, February 26, 2025, the author conducted a community service activity. This event was held in Bira village, in the rice field area of Mr. Kamar's hut, located in Bira rice field, Bandung Street, RT 10, RW 03, Tanjung Palas District, Bulungan Regency. At 8:30 AM, the author presented material regarding the socialization of agribusiness strengthening to improve the quality and selling value of cocoa beans to the women farmers' group in Antutan village. The goal of this activity is to raise farmers' awareness of the importance of improving the quality and selling value of cocoa beans, to assist farmers in managing cocoa businesses in a more effective and efficient manner, to build networks and cooperation among farmers, and to increase the income and welfare of cocoa farmers through the socialization conducted.



**Figure 1. Socialization of agribusiness empowerment in Antutan**

Village This activity began with socialization to farmers regarding the issues and obstacles that occur with cocoa fruit, such as pests and diseases that attack from the roots to the leaves, leading to a decrease in productivity and the selling quality of cocoa beans. In addition to pests and diseases, the next issue faced by farmers is that the post-harvest handling currently performed by them is still limited to the processes of breaking the fruit, drying the beans in the sun, and fermentation. One of the main problems faced by farmers is the instability of cocoa prices. When cocoa prices drop, their income decreases, resulting in losses. Furthermore, by only selling cocoa beans without further processing, farmers also miss out on the opportunity to gain added value from their agricultural products.

This activity ended with a discussion involving the accompanying lecturer, students, and key players, namely the farmer groups. It is hoped that with this socialization and demonstration, farmers in Antutan Village can reevaluate the factors that affect the selling price of cocoa beans, as well as enhance marketing strategies for agricultural products sustainably, so that the economy of Antutan Village and its surroundings remains stable. The impact of the socialization on the community that has been carried out is an increase in community awareness regarding social, economic, and environmental issues. Socialization can promote behavioral changes in the community to improve the quality of life and welfare. Additionally, socialization can also enhance community participation in social, economic, and political activities. This can help the community manage specific businesses or activities and improve the welfare of the community through increased quality of life and income.

## **RESULTS AND DISCUSSION**

### **Results**

The village of Antutan is located in Tanjung Palas, Bulungan district, in the province of North Kalimantan. The area of this village has great potential for developing cocoa and rice cultivation. However, most of the land area is focused on cocoa cultivation, which can sustainably improve the economy of the people of Antutan village. Through interviews conducted, it was revealed that the cocoa cultivation method in this village still uses traditional or manual methods. The process includes peeling, drying or sun drying, and fermentation techniques. In addition to the still conventional cultivation methods, there are several other problems that can reduce the

quality and price of cocoa beans, such as pest and disease attacks that can strike cocoa plants at any time. Some types of pests and diseases that affect cocoa plants include stem canker disease, which attacks various parts of the cocoa stem, fruit-piercing bugs that attack cocoa fruits, as well as boring pests that disrupt the fruits and the stems or branches of cocoa plants.



**Figure 2. The process of pruning cocoa branches affected by stem canker.**

The women's farming group is very serious about addressing this issue, so the implementation needs to be carried out carefully and meticulously. The initial process involves sanitization, which includes removing parts of the plants that are infected by pests and diseases. After that, they provide fertilizer. In this stage, the women's farming group uses blue pearl NPK fertilizer by making four square holes, then filling them with fertilizer and covering them back up. After applying the fertilizer, the group prunes leaves and fruits that are infected by pests and diseases, as well as cutting leaves and branches that cover cocoa.



**Figure 3. The process of fertilizer application on cocoa roots.**

Several varieties that are currently being cultivated by cocoa farmers from 6 respondents are outlined in the following table:

**Tabel 1.**

Cocoa varieties from 6 respondents in Antutan Village

Number of respondents	the varieties cultivated
3	Varietas lokal perinda
1	ICCRI
1	MCC 01
1	MCC 02

Based on the data presented in the table, it is known that there are a total of six respondents who cultivate various plant varieties. Among these six respondents, the majority or three of them plant a local variety known as Perinda. This indicates that local varieties remain the primary choice for most farmers, possibly due to good adaptation to local environmental conditions or because of the inheritance of traditional farming practices. Meanwhile, the other three respondents chose varieties that are the result of institutional development or specific selection. One respondent planted the ICCRI variety developed by the Indonesian Coffee and Cocoa Research Center, showcasing an effort to adopt technology and innovate superior varieties in plant cultivation. Additionally, two other modern varieties cultivated by one respondent each are MCC 01 and MCC 02.

The diversity of varieties cultivated by the respondents reflects the dynamics within the local agricultural system, where there is a combination of the conservation of local varieties and the adoption of superior varieties. This also indicates the potential for the development of innovation-based agriculture, although the adoption of new varieties is still relatively low compared to the dominance of local varieties. With more farmers still using the Perinda variety, there may be a need for further research regarding the productivity and resilience of this variety compared to superior varieties like ICCRI and MCC. This information is important for the planning of agricultural extension and support for farmers in the future to ensure that productivity and the quality of agricultural outputs can improve sustainably.

**Table 2. cocoa farm income**

KATEGORI	JUMLAH
TOTAL FIXED COST	Rp 319.000,00
TOTAL VARIABLE COST	Rp 4.020.000,00
TOTAL	Rp 4.339.000,00

Based on the data in the table above, the financing structure for cocoa farming activities is divided into two main categories: fixed costs (Total Fixed Cost) and variable costs (Total Variable Cost). Both contribute to the total production costs incurred by farmers during a single planting period.

First, Total Fixed Cost (TFC) was recorded at IDR 319,000.00. This cost is fixed because it is incurred only once and remains constant regardless of whether production levels increase or decrease. Components included in fixed costs generally include

agricultural tools that can be used repeatedly, such as machetes, hoes, sickles, and sprayers. This value is taken from the total expenditure on equipment purchased by six respondents, which in this case was the same for each individual. Because these tools are not used up in one season, this cost is categorized as a medium-term investment that will provide benefits over the next several planting seasons. This means that, although the amount may seem small compared to variable costs, fixed costs play a crucial role in supporting work efficiency and smooth operations in the field.

Second, the Total Variable Cost (TVC), or variable costs, was recorded as significantly higher, at IDR 4,020,000.00. This cost includes all consumable production needs directly used in the cocoa cultivation process, such as the purchase of seeds, fertilizer, and pesticides. Because the use of these inputs depends on land area, plant condition, and application frequency, the amount can fluctuate over time. In this case, all farmers spent the same amount on seeds and fertilizer, but there was variation in pesticide expenditures, indicating that individual crop protection needs against pests and diseases vary. This demonstrates technical dynamics in the field that farmers must anticipate with flexible cost allocation.

When added together, the Total Cost (TC), or the total cost incurred in one growing season, reached IDR 4,339,000.00. This figure is the sum of fixed and variable costs. The large contribution of variable costs, which reached approximately 93% of total costs, indicates that the majority of the budget allocation in cocoa farming is directed towards direct production inputs. This also means that efficient use of inputs, particularly pesticides and fertilizers, can significantly impact overall cost savings. Meanwhile, although fixed costs only account for around 7%, they remain crucial as they support technical field activities such as pruning, spraying, and soil cultivation.

From this description, it can be concluded that the cost structure of cocoa farming shows a predominance of variable costs over fixed costs. Therefore, cost management strategies and efficient use of production inputs are crucial for farmers to consider in order to increase profit margins and increase the competitiveness of cocoa products in the market.

**Table 3. Cocoa Farm Income**

KATEGORI	JUMLAH
TOTAL PENERIMAAN	Rp 3.835.000,00
TOTAL PRODUKSI	Rp 4.339.000,00
TOTAL	Rp 8.174.000,00

Based on the data in the table above, in the financial structure of a cocoa farm, it is important to understand the relationship between revenue and production costs as a basis for assessing the level of profit or loss of the farm. Based on data obtained from six respondents, three main components were calculated: Total Revenue, Total Production (referring to total production costs), and Total Accumulation (the sum of the two).

Total Revenue was recorded at IDR 3,835,000.00. This value represents the sale of cocoa harvests by farmers during one growing season. This revenue represents the amount of money farmers earn from production activities after selling cocoa to the market, either directly or through middlemen or cooperatives. This value serves as a key indicator for farmers in assessing whether their farm is profitable. However, if this value

is lower than the cost of production, the business is experiencing a financial loss, although there are other non-financial benefits such as increased food security or the use of free time.

Furthermore, Total Production, which in this case refers to total production costs, is IDR 4,339,000.00. This cost is the accumulation of two types of expenditures: fixed costs and variable costs. Fixed costs include the procurement of tools such as machetes, hoes, sickles, and sprayers, while variable costs cover operational needs such as seeds, fertilizer, and pesticides. This total figure reflects the financial burden farmers must bear during a single planting season to produce a harvest. Rationally, higher costs than revenues indicate that, economically, the cocoa farming business is still operating at a loss during this growing season.

The table also displays the aggregate total of Rp8,174,000.00, which is the sum of total revenues and total production costs. This total is not intended to represent net profit but merely reflects the overall cash flow in and out of the farming process. In the context of farming evaluation, this value is useful for understanding the scale of the business and the volume of financial transactions involved.

Overall, this data suggests that during the observed growing season, the cocoa farming business has not yet shown a financial profit, as production costs are higher than sales revenues. With a loss of Rp504,000, farmers are experiencing significant financial pressure. This could be due to several factors, including high pest control costs (pesticides) or suboptimal yields due to agro-climatic conditions or cultivation techniques that still need improvement. Therefore, a comprehensive evaluation is crucial to ensure this farming business is more efficient and profitable going forward. Efforts to improve input efficiency, adopt agricultural technology, and strengthen market access can be medium- and long-term solutions to increase cocoa farmer profitability.

## Discussion

Cocoa is one of Indonesia's leading export commodities, possessing not only high economic value but also significant potential for further development. Antutan Village, located in Tanjung Palas District, holds significant potential for cocoa plantations managed by the farming community. Cocoa farming serves as a primary source of income for the local population. However, cocoa farmers in this area still face a number of challenges that hinder their productivity. A field survey revealed common challenges faced by cocoa farmers, including pests and diseases, a lack of facilities and infrastructure, a lack of awareness and public awareness about the importance of cocoa fermentation, which can affect the quality and market value of cocoa beans, and a lack of subsidies for pesticides and fertilizers, all contributing to low cocoa productivity in Antutan Village.

A survey and interview with the head of the Antutan Village Women's Farmers' Group (KWT), Faridah, stated that the pests and diseases affecting cocoa plants are caused by flooding in the plantation area, which causes dampness and attracts microorganisms that can attack the roots, stems, leaves, and fruit. Examples include borers, stem cancer, and other diseases. One way they do this is by pruning or trimming the leaves, stems, and fruit to prevent them from infecting each other. Therefore, maintaining the quality of cocoa beans is crucial to increase productivity and increase their selling value.

The selling price of cocoa is greatly influenced by its quality and the level of processing used, which ultimately affects its market value. In Antutan Village, wet cocoa is sold for IDR 50,000 per kilogram. Wet cocoa refers to freshly harvested cocoa beans that have not undergone any drying or fermentation processes. This price reflects the fresh condition of the beans, which have a high water content. In contrast, the selling price for dry cocoa beans is set at IDR 90,000 per kilogram. Similarly, dry cocoa has not undergone any fermentation process.

Post-harvest handling by farmers is currently limited to the processes of breaking the pods, drying the beans in the sun, and fermentation. One of the main problems faced by farmers is the instability of cocoa prices. When cocoa prices fall, their income decreases, resulting in losses. Furthermore, by simply selling cocoa beans without further processing, farmers also miss out on opportunities to gain added value from their produce.

One important factor in agricultural development is human resources, particularly women farmers. The Women Farmers Group (KWT) is a community consisting of women active in the agricultural sector. This group was formed out of a sense of togetherness, harmony, and shared interests in utilizing agricultural resources. Through collaboration, they strive to increase agricultural productivity and the well-being of each member. Producing highly competitive agribusiness products requires a workforce with adequate knowledge and skills. Therefore, empowering women as a source of labor within the family is crucial for increasing their potential and capabilities. Extension activities, as a form of non-formal education, are an effective alternative to empower women. Through extension, it is hoped that female farmers will increase their participation in cocoa farming activities.

On Wednesday, February 26, 2025, the author carried out a community service activity. This activity was held in Bira village, in the area of Mr. Kamar's cottage, which is located in the Bira rice fields, Jalan Bandung, RT 10, RW 03, Tanjung Palas District, Bulungan Regency. At 08.30 am, the author delivered material on the socialization of strengthening agribusiness to improve the quality and selling value of cocoa beans to a group of women farmers in Antutan village. The purpose of this activity is to increase farmer awareness about the importance of improving the quality and selling value of cocoa beans, help farmers manage cocoa businesses in a more effective and efficient manner, build networks and cooperation among farmers, and increase the income and welfare of cocoa farmers through the socialization carried out.



**Figure 4. Group photo of the community and agricultural business actors in Antutan Village.**

The impact of the outreach program on the community has been increased public awareness of social, economic, and environmental issues. Outreach can promote behavioral changes in the community to improve quality of life and well-being. Furthermore, outreach can also increase community participation in social, economic, and political activities. This can help the community manage certain businesses or activities and improve community welfare through improved quality of life and income.

The community welcomed, accepted, and responded positively to the outreach and information provided by the author. They showed interest and enthusiasm to learn more about the topics discussed.

## CONCLUSION

Antutan Village in Tanjung Palas District, Bulungan Regency, North Kalimantan, has significant potential for developing cocoa as a primary source of income for the community. Although still using traditional cultivation methods and facing challenges such as pests, plant diseases, and limited production facilities, farmers strive to maintain productivity through measures such as pruning, fertilization, and garden sanitation.

The majority of farmers still rely on local varieties such as Perinda, although some are beginning to adopt superior varieties such as ICCRI and MCC. Farmer production and income are highly dependent on harvest volume, as the selling price is relatively fixed at IDR 90,000/kg for dried cocoa. However, productivity still varies among farmers due to differences in land area, cultivation techniques, and production inputs. Fertilizer and pesticide use contribute a significant portion of production costs, with a high propensity for chemical use, particularly Matador and Alika pesticides, which absorb significant budget expenditures. This reliance on chemical inputs raises concerns about long-term environmental impacts.

Women's Farmers' Groups (KWT) play a crucial role in pest control and garden maintenance. Socialization and outreach activities, such as those conducted in February 2025, have proven effective in increasing awareness, knowledge, and participation of farmers—especially women—in improving the quality and selling value of cocoa. Overall, cocoa cultivation in Antutan Village has the potential to continue growing, but requires support in the form of technical training, access to quality and environmentally friendly inputs, and policies that encourage agribusiness innovation to achieve sustainable cocoa farming.

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