

Measuring socio-economic impact of the Lung Anai chocolate program through the SROI approach

*Agung Enggal Nugroho*¹, *Mohamad Fadli*², *Dede Aprylasari*^{3*}, *Sugeng Raharjo*⁴, and *Muslim Gunawan*⁵

¹Department of Agribusiness, Faculty of Agriculture, Mulawarman University, Samarinda, 75243 East Kalimantan, Indonesia

²Department of Agrotechnology, Faculty of Agriculture, Kutai Kartanegara University, Kutai Kartanegara, 75513 East Kalimantan, Indonesia

³Department of Animal Science, Faculty of Agriculture, Mulawarman University, Samarinda, 75243 East Kalimantan, Indonesia

⁴Department of Management, Faculty of Economics and Business, Mulawarman University, Samarinda, 75243 East Kalimantan, Indonesia

⁵Community Development Section Head External Affairs & Security Department, PT Multi Harapan Utama (MHU), Indonesia

Abstract. This study examines the socio-economic impact of the Lung Anai Chocolate Program initiated by PT Multi Harapan Utama (MHU) in Lung Anai Village, Kutai Kartanegara, East Kalimantan. As part of the Community Development and Empowerment Program (PPM) in the mining sector, the initiative focuses on strengthening the cocoa value chain through improved cultivation practices, quality enhancement via fermentation, and value-added processing into products such as chocolate bars and cocoa powder. The research employs a quantitative descriptive approach complemented by qualitative data, collected through interviews, observations, questionnaires, FGDs, and secondary sources including company reports and academic literature. Findings show that during 2023–2025, the company invested IDR 649,604,644, generating benefits valued at IDR 762,535,205. These benefits include increased turnover of Rumah Cokelat managers, improved cocoa processing skills, additional farmer income, MSME contributions, and institutional empowerment. The Social Return on Investment (SROI) ratio of 1.17 indicates that each IDR1.00 invested delivers IDR1.17 in social and economic value, yielding a 17% surplus above costs. This demonstrates equitable distribution of benefits across farmers, MSMEs, and local institutions. Beyond direct gains, the program enhances community capacity, fosters new business opportunities, and supports sustainable local economic development, making it a replicable CSR/PPM model for post-coal regions.

* Corresponding author: dedeaprylasari@faperta.unmul.ac.id

1 Introduction

Cocoa is a strategic plantation commodity vital in global and national economies. As the primary raw material for the chocolate industry, global demand for cocoa continues to increase in line with the growth of the food, pharmaceutical, and cosmetics industries. Indonesia ranks third in the world as the largest cocoa producer after the Ivory Coast and Ghana, producing an average of 700–750 thousand tons annually or about 14.7% to 15% of total cocoa production. However, despite its significant potential, most of Indonesia's cocoa production still comes from smallholder plantations with low productivity, inconsistent quality, and limitations in the supply chain and post-harvest processing. Most cocoa production in Indonesia comes from Sulawesi (63%), followed by Sumatra, Java including Kalimantan [1]. East Kalimantan is one of the provinces that has made cocoa a leading plantation commodity to diversify the regional economy. This aligns with the provincial government's policy to reduce dependence on the mining sector, particularly coal, oil, and gas, non-renewable resources. Data from the East Kalimantan Plantation Service shows that the area of cocoa plantations in the province reaches thousands of hectares, with the largest concentration in Kutai Kartanegara Regency. This potential makes cocoa an alternative source of new economic growth based on local and sustainable resources.

One of the villages that has become a center for cocoa development is Lung Anai Village, Loa Kulu District, Kutai Kartanegara Regency. This village is unique because it is known as a cocoa producer and a cultural town dominated by the Dayak community. This combination of economic potential and local wisdom creates a significant opportunity to make cocoa a trade commodity and a regional identity with added social and cultural value. However, this potential has not been fully utilized because the community still faces various obstacles, such as limited processing facilities, low business management skills, and suboptimal market access. This condition has resulted in low economic value received by farmers and minimal cocoa contribution to improving village welfare. In response to these challenges, PT Multi Harapan Utama (MHU) initiated the Lung Anai Chocolate Program through its Community Development and Empowerment Program (PPM). Unlike CSR in other sectors, PPM in the mineral and coal sector is a legal obligation that aims to ensure that the presence of mining companies provides tangible benefits to the communities in their operational areas. Therefore, this program is not only interpreted as a corporate philanthropic activity, but also as a long-term strategy to support sustainable village development.

The Lung Anai Chocolate Program is designed to strengthen the entire cocoa value chain, from improving cultivation techniques and enhancing post-harvest quality through fermentation and drying, to developing value-added processed products such as chocolate bars, cocoa powder, and other derivative products. Furthermore, the program emphasizes community economic empowerment through skills training, technical assistance, and facilitating access to modern markets. Thus, the PPM focuses on increasing short-term income and establishing a sustainable cocoa ecosystem capable of supporting the long-term well-being of the Lung Anai Village community. The program also has a strong social dimension. For the Dayak community in Lung Anai Village, cocoa is an economic resource and part of efforts to maintain village independence and strengthen cultural identity. Through community empowerment, the program contributes to enhancing individual and group capacity, creating new jobs, and increasing social cohesion at the local level.

Furthermore, the program supports the Sustainable Development Goals (SDGs), specifically reducing poverty, promoting inclusive economic growth, and ensuring sustainable production and consumption patterns. To assess the effectiveness and impact of the CSR program, a comprehensive evaluation instrument is needed that can measure value not only financially but also socially and environmentally. Therefore, this study uses the Social Return on Investment (SROI) approach. SROI analysis provides a broader picture of

the program's benefits by converting social impacts into monetary values, making it easier for stakeholders to understand how much a company's social investments benefit the community. The results of this study are expected to inform decision-making regarding CSR program improvements, strengthen the community-based cocoa development model, and provide recommendations for local governments in promoting sustainable alternative economies in East Kalimantan.

2 Research methods

2.1 Research location and time

This research was conducted in Lung Anai Village, Loa Kulu District, Kutai Kartanegara Regency, East Kalimantan, the implementation location for the Lung Anai Chocolate Program. This village was chosen because it has significant cocoa potential and is a center of community activities facilitated through the CSR program of PT Multi Harapan Utama (MHU). The research lasted three months, from October 2024 to March 2025, with activity stages including preparation, data collection, analysis, and preparation of a final research report.

2.2 Types and research approaches

This study uses a quantitative descriptive approach supported by qualitative data. This approach was chosen because the research focuses not only on statistical figures but also on an in-depth understanding of the social and economic impacts generated by the Lung Anai Chocolate Program. The primary analysis used is Social Return on Investment (SROI), an evaluation method that allows for measuring a CSR program's social and economic benefits by converting them into monetary value [2]. SROI enables stakeholders to understand not only the financial return on their investment but also the broader social benefits derived from it [3, 4]. Thus, the research results can provide an overview of the ratio between the value of benefits received by the community and the value of the investment made by the company.

2.3 Population and sample

The population in this study was all beneficiaries of the Lung Anai Chocolate Program, both directly and indirectly. This included cocoa farmers, farmer groups, cocoa processing business actors, and local stakeholders involved in program development. The study used purposive sampling from this population to determine the most relevant sample. The study respondents consisted of 30 cocoa farmers who were program beneficiaries, five farmer group administrators, five cocoa processing business actors, and five local stakeholders, such as village officials, community leaders, and representatives of PT MHU. This sample selection was expected to provide a comprehensive picture of the program's impact on various interest groups.

2.4 Data types and sources

The data used in this study consisted of primary and secondary data. Primary data were obtained through in-depth interviews with farmers, farmer group administrators, processing business actors, and relevant stakeholders. In addition, questionnaires were used to measure economic benefit indicators such as increased income, production cost savings, and job creation. Primary data were also obtained from directly observing cocoa cultivation activities,

fermentation, and processed products. Meanwhile, secondary data were obtained from official reports from PT MHU regarding the implementation of CSR programs, cocoa production data from the East Kalimantan Plantation Service, and relevant academic literature on SROI and cocoa commodity development in Indonesia.

2.5 Data collection technique

The data collection techniques in this study were conducted through several stages. First, structured and semi-structured interviews were conducted with farmers, farmer groups, and stakeholders to explore their experiences participating in the program and their perceived impacts. Second, questionnaires were distributed to obtain quantitative data related to economic and social benefit indicators. Third, direct observations were conducted to observe cocoa cultivation and processing practices, thus obtaining a concrete picture of the changes after the program. Furthermore, documentation was also conducted by collecting activity reports, production data, and photographs of program activities.

2.6 Data analysis techniques

The data analysis in this study uses the Social Return on Investment (SROI) stages [5]. The first stage is stakeholder identification, which involves determining the parties involved in or benefiting from the program. The second stage is outcome mapping, which involves developing a theory of change that explains the relationship between the program's inputs, outputs, and outcomes. The third stage is evidencing outcomes, which involves gathering empirical evidence regarding the program's benefits based on primary and secondary data. The fourth stage is outcome monetization, which involves converting social impacts into monetary value using relevant financial proxies, such as increased farmer income or reduced production costs. The fifth stage is calculating SROI using the formula:

$$SROI = \frac{\text{Total Present Value of Benefit}}{\text{Total Value of Investment}} \quad (1)$$

This formula illustrates the ratio of total social value generated to the investment made, where a ratio greater than 1 indicates a positive return, meaning that the social benefits outweigh the costs incurred [6, 7]. The final stage is interpreting the results and explaining the SROI ratio value obtained and its implications for society and the company.

2.7 Data validity and reliability

This study used source triangulation to ensure data validity and reliability by comparing interview results, questionnaires, and documentation. Furthermore, focus group discussions (FGDs) involving representatives of farmers, farmer groups, village officials, and PT MHU were conducted to validate the research findings. This approach is expected to result in more accurate, objective data that better represents the actual conditions on the ground.

3 Result and discussion

3.1 Program investment

During the 2023–2025 period, PT Multi Harapan Utama (MHU) has disbursed IDR 649,604,644 to support the development of the Lung Anai Chocolate Program. This

distribution of funds demonstrates a phased investment strategy oriented towards sustainability. In the first year, funds disbursed reached IDR 447,668,868, or approximately 69% of the total investment. These funds were allocated primarily for constructing basic infrastructure such as a production house, fermentation house, and drying facilities, as well as for procuring chocolate processing machinery (grinders, tempering machines, bean peeling machines) and basic technical training. This focus on significant investments in the initial phase emphasizes the importance of building a production foundation while simultaneously improving the initial skills of the community so they can adapt to modern cocoa processing. Detailed results of the program's investment can be seen in Table 1.

Table 1. Lung Anai chocolate investment analysis.

No	Description	Impact = Outcome - (Deadweight + Attribution + Displacement + Drop Off)			
		2023 Year 1 (BI Rate 6.00%)	2024 Year 2 (BI Rate 6.00%)	2025 Year 3 (BI Rate 6.00%)	TOTAL
		0,9433962	0,8899964	0,8396193	
Investment					
1	Investment Costs	447.668.868	165.832.147	36.103.629	649.604.644
2	Operating costs	-	-	-	
Benefit					
1	Chocolate House Manager				
1.1	Improving Manual Chocolate Paste Processing Skills	84.245.283	-	-	84.245.283
1.2	Improving Premium Chocolate Processing Skills (Chocolate Powder and Candy) with Modern Machines	83.886.792	-	-	83.886.792
1.3	Improving Vegetable Chocolate Processing Skills (Regular Chocolate)	-	74.741.901	-	74.741.901
1.4	Sales Turnover of Cocoa Products at Lung Anai Chocolate House	-	85.496.618	30.725.028	116.221.646
1.5	Increased Income for LA Chocolate House Managers/Employees	4.716.981	24.919.900	8.396.193	38.033.074
2	Cocoa Farmers				
2.1	Cocoa Fermentation Skill Improvement	17.924.528	-	-	17.924.528
2.2	Increase in Sales Revenue from Fermented Cocoa Beans	-	10.177.666	-	10.177.666
3	Jember Research and Development Center	-	-	-	-
3.1	Income of Resource Persons for Premium Chocolate Processing Training Activities	15.101.415	-	-	15.101.415
3.2	Resource Person's Income from Vegetable Chocolate Processing Training Activities	-	25.787.647	-	25.787.647
3.3	Increasing Sales Turnover of Cocoa Production Machines	184.088.491	-	-	184.088.491
4	Mamia Chocolate Palu				
4.1	Resource Person's Income for Manual Chocolate Processing Training Activities (Chocolate Paste)	32.488.208	-	-	32.488.208
5	MSME actors around				
5.1	Increase in Turnover of Food and Beverage Providers (Catering) around	19.761.792	9.955.723	-	29.717.515
6	PEDE Nusantara Madani Foundation				
6.1	Increasing Foundation Development Contributions	17.924.528	8.454.966	-	26.379.494
6.2	Increasing Foundation Managers' Income from Activity Honorariums	16.132.075	7.609.470	-	23.741.545

Source: Processed primary data, 2025

In the second year, the investment amount decreased to IDR 165,832,147, or approximately 26% of the total funds. This change in allocation signified a shift in strategy, from physical development to production capacity development and product diversification. Funds were used for training in processing derivative products such as plant-based chocolate, cocoa powder, and chocolate candy, as well as strengthening group management in managing business units. The decrease in funding indicated that the target group was being directed to become independent in operating the established infrastructure, while the company played a more instrumental role in facilitating quality improvement. Entering the third year, investment again dropped sharply to IDR 36,103,629, or only 5% of the total funds. In this phase, funds focused more on maintaining production facilities, strengthening market networks, and supporting program sustainability. This trend indicated a gradual exit plan strategy, where the CSR company was no longer the dominant actor but provided only minimal assistance so that the group could continue its business independently.

When calculated at a 6% discount rate, the net present value (NPV of Cost/Investment) still shows a total investment of IDR 649,604,644 over three years. All allocated funds have been fully realized as a tangible manifestation of the company's CSR commitment. This phased investment strategy aligns with the principle of self-reliance-based community empowerment, where the most significant intervention is provided initially as the "basic capital" for development, then gradually reduced to avoid creating dependency. The implications of this investment pattern are pretty significant. First, in the initial phase, the community gains access to previously unavailable technology and infrastructure, thereby increasing the competitiveness of local cocoa products. Second, product diversification in the second year encourages the creation of greater economic added value and opens up new market opportunities. Third, reducing intervention in the third year indicates that the program is not solely oriented towards charity but is truly directed at creating sustainable village business units.

Thus, the results of this program demonstrate that a phased investment model can strengthen production foundations, increase processing capacity, and gradually build community independence. This is consistent with community-based development theory, which argues that external intervention is effective when accompanied by a transition strategy toward independence.

3.2 Benefits for chocolate house managers and cocoa farmers

3.2.1 Improved cocoa processing skills

The capacity-building program for Lung Anai Chocolate House managers is a crucial foundation for creating high-value-added chocolate products. In 2023, managers participated in two main training sessions: manual chocolate paste processing with an outcome value of IDR 84,245,283, and premium chocolate training using modern machinery with an outcome value of IDR 83,886,792. Both training sessions emphasized mastery of basic technical skills but also provided an understanding of premium product quality standards, which demand consistency, hygiene, and precision at every production stage. In 2024, managers' skills were further expanded with training in plant-based chocolate processing, resulting in an outcome value of IDR 74,741,901. Plant-based chocolate products are a strategic innovation because they align with global market trends that increasingly prioritize healthy, environmentally friendly products, and are based on vegetarian and vegan consumer preferences. This demonstrates that the program focuses on mastering traditional production techniques and guides managers to adapt to modern market dynamics. After adjusting for reduction factors (5% deadweight, 5% attribution, and 10% drop off), the real benefit value remains high, thus significantly increasing the capacity of the chocolate house business.

The direct impact of this skills improvement is the emergence of the ability to produce various types of cocoa-derived products, ranging from chocolate paste, cocoa powder, instant chocolate drinks, to chocolate candies in various flavors. This product diversity automatically expands market share for the local segment and opens up export opportunities. Furthermore, this new competency strengthens Rumah Cokelat's position as a center for cocoa-based business innovation and incubation in Lung Anai Village, which can accelerate the formation of a sustainable cocoa ecosystem. Processing cocoa into value-added products is a crucial strategy for increasing competitiveness while increasing the economic benefits received by local communities. Furthermore, it has been emphasized that diversification of cocoa-based products, including the development of plant-based chocolate, can meet the needs of modern consumers who are increasingly concerned about health and sustainability. Another study by Sulistyono et al. [8] also showed that structured training programs can improve skills, product quality, and strengthen the competitiveness of agriculture-based MSMEs. Thus, the improvement of cocoa processing skills initiated through this program not only provides practical technical skills benefits but also creates a strategic impact in terms of innovation, competitiveness, and strengthening a more sustainable cocoa-based business ecosystem.

3.2.2 Manager's turnover and income

The program's economic impact is evident through the increase in sales turnover of Lung Anai Chocolate House products. In 2024, turnover was recorded at IDR 85,496,618, then increased by IDR 30,725,028 in 2025, bringing the total over two years to IDR 116,221,646. This figure indicates consistent market growth, although the scale is still relatively small compared to large industries. Product diversification is a key factor in this achievement, as sales are no longer dependent on a single product type, but instead on a varied product portfolio such as chocolate paste, cocoa powder, vegetable chocolate, and chocolate candy. This diversification strategy can minimize the risk of loss due to unstable demand in specific markets, while expanding the consumer segment. The direct income received by the chocolate house managers has also increased significantly. In 2023, income was recorded at IDR 4,716,981, rising sharply to IDR 24,919,900 in 2024, and remaining stable at IDR 8,396,193 in 2025. Total real income collected during the study period reached IDR 38,033,074. Although there were fluctuations from year to year, this pattern confirms that the manager's income source has shifted from merely a supplement (subsidy) to a key pillar in supporting household economic sustainability. Thus, the program provides immediate benefits and builds a more sustainable foundation for economic independence.

In addition to its direct economic impact, this program also opens up strategic opportunities for business expansion into digital marketing. Processed chocolate products can be marketed through e-commerce platforms, social media, and local marketplaces, thus expanding consumer reach and streamlining distribution costs. The trend of digitalizing local product marketing has been proven to increase brand visibility while strengthening consumer loyalty. Furthermore, Rumah Cokelat has significant potential to be developed as a cocoa-based educational tourism destination. This educational tourism concept allows consumers to observe the production process, participate in workshops, and enjoy the finished product. Integrating local products and educational tourism can increase economic added value while expanding community-based product marketing networks. Thus, the increase in turnover and income for the managers of Rumah Cokelat Lung Anai reflects the CSR program's short-term success and paves the way for a more sustainable village economic transformation. The combination of product diversification, digital marketing, and the potential of educational tourism makes this program a model for local economic development based on the village's superior resources, which can compete in the modern market.

3.2.3 Benefits for cocoa farmers

In addition to management, the Lung Anai Chocolate program directly impacts cocoa farmers as key actors in the upstream supply chain. In 2023, 40 farmers participated in fermentation training with an outcome value of IDR 17,924,528. Fermentation is a crucial stage in determining cocoa bean quality, as this biochemical process influences the formation of the flavor, aroma, and color of the resulting chocolate. Before the training, most farmers in Lung Anai Village still relied on traditional methods without paying attention to post-harvest standards, resulting in inconsistent bean quality and impacting selling prices. Through this intervention, farmers began to understand the importance of implementing fermentation standards that meet the needs of the premium chocolate industry. In 2024, the financial impact became increasingly apparent. Farmers earned an additional IDR 10,177,666 in income from selling fermented beans at a higher price than non-fermented beans. This reflects a shift in the position of farmers from suppliers of low-value raw materials to producers of premium raw materials with higher bargaining power. Abbasi et al. [9] showed that the difference between fermented and non-fermented beans can reach 20–30% in selling price because the international market values fermented beans that meet quality standards more.

Even when factoring in reductions such as deadweight (5%), attribution (5%), and drop-off (10%), the real benefits remain significant. Furthermore, this transformation shifts the farmer paradigm from simply pursuing production quantity to emphasizing yield quality. This aligns with Borrego-Ruiz et al. [10]’s findings that the sustainability of the cocoa industry is primarily determined by improvements in quality at the farmer level, not just production volume. In addition to increasing individual incomes, the farmer’s success in producing high-quality fermented beans strengthens the reciprocal relationship with Rumah Cokelat Lung Anai. The production house requires premium raw materials to produce high-value-added chocolate, while the farmer receives financial incentives for these improvements. This synergy between upstream and downstream ultimately creates a more sustainable cocoa ecosystem, where economic benefits are spread more widely and encourage the independence of village communities. Thus, the program’s benefits to cocoa farmers extend beyond short-term income increases and open opportunities for their integration into the premium cocoa value chain. This impact is crucial for ensuring the sustainability of the CSR program while creating a village development model based on superior local commodities that is inclusive and competitive.

3.3 Benefits for the local community

3.3.1 Benefits for local MSMEs

The Lung Anai Chocolate Program provides real opportunities for MSMEs in the surrounding villages, particularly those providing food, transportation, and other supporting services. Data shows that in 2023, the value of benefits received by local MSMEs was recorded at IDR 19,761,792, while in 2024 it was IDR 9,955,723, with a total accumulated IDR 29,717,515 over two years. Although this amount is relatively small compared to the financial benefits received by cocoa managers and growers, its impact cannot be ignored as it demonstrates a multiplier effect. This means that the program benefits core actors (managers and growers) and stimulates economic growth for small businesses in the surrounding area. This benefit is reflected in the increased demand for program logistics, such as providing food for training participants, transportation services for raw materials and products, and other supporting needs that can expand the local MSME market. Thus, MSMEs that were previously limited to daily household consumption now have the opportunity to

increase production capacity to meet program needs. This is in line with the opinion of [Visiana \[11\]](#), who emphasized that community-based economic activities can expand market access for local MSMEs while strengthening the resilience of the village economy.

Furthermore, the multiplier effect of the program also creates a more inclusive value chain. According to [Taufan and Maqvira \[12\]](#), community-based industries are crucial in driving MSMEs because they can create linkages between core and supporting sectors. Although MSMEs are not directly involved in chocolate production in the context of Lung Anai Village, they still benefit from the economic linkages created. This demonstrates a spillover effect that benefits the surrounding community, even those previously unconnected to the cocoa sector. Beyond the economic aspect, MSME involvement also strengthens the village's social base through more diverse business interactions. The presence of new demand empowers MSMEs to develop their businesses independently. This aligns with theory of participatory development, where community-based development emphasizes core economic growth and fosters broader participation so that benefits are felt more equitably. Thus, although the financial contributions received by local MSMEs are nominally smaller than those of farmers or managers, their presence is significant in creating a multiplier effect, expanding markets, and strengthening the village's socio-economic structure. This proves that the Lung Anai Chocolate Program is not only a production program, but also a driving force for the growth of a sustainable local economy.

3.3.2 Social benefits and economic networks

Beyond financial contributions, the Lung Anai Chocolate Program also significantly strengthens the socio-economic networks of the Lung Anai Village community. The involvement of local MSMEs extends beyond business transactions to broader, more sustainable collaborations. For example, local catering providers receive regular opportunities to serve customers at various training events, while transportation service providers earn additional income from distributing raw materials and processed products. This pattern fosters a mutually beneficial reciprocal relationship between economic actors in the village. Furthermore, the program creates a more inclusive economic climate, allowing communities previously excluded from the cocoa production chain to benefit. Although not all residents participate directly in chocolate processing, the connection through the supply chain and supporting services makes the program's benefits more evenly distributed. This aligns with a perspective on community-based development, where community-based development strengthens social cohesion and encourages collective participation.

Social cohesion is crucial because it strengthens a sense of togetherness, trust, and solidarity among villagers. The social networks and trust formed within a community form social capital, significantly accelerating local development. In the context of Lung Anai Village, social capital is reflected in the cooperation among residents in supporting the program's sustainability, both as service providers, consumers, and business partners. Furthermore, the program serves as a platform for collective learning. The community gains new experiences in business management, marketing, and product diversification through regular stakeholder interactions. According to [Rambe et al. \[13\]](#), participatory development involving cross-actor interaction can sustainably enhance village communities' social and economic capacity. Thus, the program's social benefits are not merely short-term but also lay the foundation for long-term development. Overall, the program's social benefits and economic networks demonstrate that the impact of CSR is measured not only in terms of financial returns but also by the program's ability to strengthen social ties, expand participation, and create an inclusive economic ecosystem at the village level.

3.3.3 Benefits of institutions and community empowerment

Another equally important impact of the Lung Anai Chocolate Program is the strengthening of local institutions, which serve as the foundation for the program's sustainability. The program successfully created a formal platform for community participation in the planning, decision-making, and implementation through collaboration with the PEDE Nusantara Madani Foundation and village community groups. The company's financial support to the foundation, amounting to IDR 30,000,000 for institutional development and IDR 27,000,000 for honorariums for the implementation team, demonstrates a structural investment oriented toward long-term capacity building. This allocation of funds not only enhances the professionalism of the management institution but also strengthens the legitimacy of the community's role as active partners in program management. Institutional strengthening is strategic because it transforms the community from passive beneficiaries to key program management and development actors. According to Rambe et al. [13], the sustainability of empowerment programs is highly dependent on the strength of community institutions, as local institutions serve as the driving force for coordination, knowledge transfer, and the safeguarding of benefits after the company's intervention ends. Strong local institutions enable community ownership of the program, thereby increasing the chances of long-term success.

In addition to institutional aspects, this program also contributes to broader community empowerment. Through training, mentoring, and involvement in production and marketing activities, communities gain increased technical and managerial capacity. According to Azizah et al. [14], empowerment occurs when communities can control resources, make decisions, and improve their capacity. In the context of Lung Anai Village, empowerment is reflected in the increased confidence of residents to actively participate in the cocoa value chain, whether as managers, growers, or supporting business actors. Thus, the benefits of institutional and community empowerment complement the two previous benefits (local MSMEs and socio-economic networks). Combining economic strengthening, social inclusion, and institutional capacity creates a more resilient, inclusive, and sustainable village development ecosystem. The program provides short-term impacts in the form of additional economic resources and lays the institutional foundation and social capacity to support long-term village development.

3.4 Program effectiveness and SROI value

The results of the Social Return on Investment (SROI) evaluation of the Lung Anai Chocolate Program show a relatively high level of effectiveness and provide a comprehensive picture of how social investment can create added value for the community.

Based on the calculation results, the investment value spent by the company and partners during the 2022–2024 period was recorded at IDR 649,604,644 (NPV of Cost/Investment), while the total benefits generated reached IDR 762,535,205 (NPV of Benefit) (Table 2). Thus, the SROI value obtained was 1.17, meaning that every IDR 1.00 of investment generates benefits of IDR 1.17 for the community over three years. This ratio indicates a 17% surplus in benefits over costs, confirming that the program recoups the investment and provides socio-economic benefits for the local community. The details of the benefits generated in this program include five main components. First, an increase in turnover and income for Rumah Cokelat managers of IDR 154,254,720 results from the successful diversification of processed products and increased market access. Second, an increase in cocoa processing skills worth IDR 242,874,000, obtained through a series of technical training, production workshops, and knowledge transfer that strengthens the capacity of local human resources. Third, the increase in cocoa farmer income through fermentation amounted

to IDR 28,102,194, which shows that farmers are starting to get financial incentives from implementing better post-harvest standards. Fourth, economic contributions to local MSMEs amounted to IDR 29,717,515, generated through increased demand for consumption, transportation services, and logistical support from program activities. Finally, institutional support and community empowerment amounted to IDR 307,586,776, reflecting strengthened village governance, increased legitimacy of local institutions, and active community involvement in program management.

Table 2. SROI analysis of the Lung Anai chocolate program.

NPV of Cost/Invest	649.604.644
NPV of Benefit	762.535.205
SROI (NPVB/NPVI)	1,17
Description	Every 1 Rupiah invested in a social intervention program can generate 1.17 Rupiah of benefits in the community over a 3-year investment period.
References (General)	SROI is positive if the SROI value is greater than 1, meaning that every 100% of the capital can generate a value greater than the invested capital. SROI is negative if the SROI value is less than 1, meaning that every 100% of the capital cannot generate a business result value greater than the invested capital.
Reference (PROPER)	The PROPER GOLD assessment requires a positive SROI value.

Source: Processed primary data, 2025

The cost-benefit comparison shows that the program's SROI value is positive and effective, exceeding the minimum standard (>1) commonly used in SROI assessments. Consistent with Azizah et al. [14]'s perspective, the success of an empowerment program is not solely measured by a high ratio, but rather by its ability to generate long-term benefits that support social and economic sustainability. In this context, a value of 1.17 indicates that the chocolate program provides financial benefits and builds community capacity to transform toward a higher-quality and more competitive production system. Furthermore, the program's effectiveness can be seen from the relatively equitable distribution of benefits across the three main beneficiary groups. Chocolate House managers gain increased production capacity, business management skills, and additional income from product diversification. Cocoa farmers gain additional income from fermentation and are encouraged to improve the quality of their cocoa beans to meet premium market standards. Meanwhile, the surrounding community gains economic opportunities through strengthening local MSMEs and developing more professional village institutions. This inclusive distribution of benefits confirms the multiplier effect, where the program's benefits are not confined to a single core group but spread across various levels of society. This aligns with the concept of community-based enterprise proposed by Aprylasari et al. [15], which states that the success of community empowerment is determined by the program's ability to foster mutually reinforcing economic and social networks.

Furthermore, the relatively low deadweight loss (5%) and displacement of only 0–5% strengthen the validity of the evaluation results. This means that the benefits generated primarily directly impact the program intervention, not solely influenced by external factors or shifts from other activities. This success is inseparable from the strategy that combines a capacity-building approach, strengthening local institutions, and developing an integrated cocoa value chain from upstream to downstream. Thus, the SROI value of 1.17 confirms that the Lung Anai Chocolate Program is practical, sustainable, and replicable. The program's effectiveness is seen not only in the aspect of increasing community income but also in the creation of a more sustainable cocoa ecosystem through supply chain integration,

empowering MSMEs, increasing village institutional capacity, and enhancing community skills. This makes the Lung Anai Chocolate Program an example of a local commodity-based CSR model oriented towards a balance between economic benefits, social empowerment, and community sustainability.

4 Conclusion and suggestions

The Social Return on Investment (SROI) analysis of the Lung Anai Chocolate Program shows that the program is effective in creating significant economic, social, and cultural impacts for the community of Lung Anai Village, Loa Kulu District, Kutai Kartanegara. With a total investment of IDR 649,604,644 during the 2023–2025, the program successfully generated benefits worth IDR 762,535,205 or an SROI of 1.17. This means that every IDR 1 invested can provide benefits worth IDR 1.17, so the program covers investment costs and creates a surplus of benefits of 17%. The resulting benefits include increased production capacity and income for Rumah Cokelat managers, additional income for farmers through cocoa bean fermentation, and a multiplier effect for the surrounding community through local MSMEs and strengthening village institutions. In addition, the program also strengthens Dayak cultural identity by making cocoa not just an economic commodity, but a symbol of village independence and sustainable development.

To optimize these benefits, several things need to be considered—first, institutional strengthening through cooperatives or village cocoa associations to strengthen governance and expand market networks. Second, Lung Anai chocolate products' market access and branding strategies should be improved through digital platforms and local tourism networks. Third, cocoa derivative products such as instant drinks or local souvenirs should be diversified to address modern consumer trends. Fourth, synergy with the Dayak culture-based tourism sector to increase added value. Fifth, program sustainability must be maintained through ongoing local government and strategic partners mentoring mechanisms. Finally, the cocoa-based empowerment model in Lung Anai Village can be replicated in other villages with similar potential, as part of East Kalimantan's post-coal economic diversification strategy. Thus, the Lung Anai Chocolate Program can be categorized as a Community Development and Empowerment Program (PPM) model that successfully integrates economic, social, and cultural aspects sustainably while serving as an example of superior commodity-based CSR worthy of expansion.

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