

RESEARCH PAPER**OPEN ACCESS****Assessing the economic impact of the enhancement of cacao value adding program on local cacao growers and farmers in the municipality of Lasam, Cagayan valley, Philippines****Wilfredo M. Perciano*, Angelito B. Salas***Cagayan State University, Lasam Campus, Philippines***Key words:** Cacao value-adding program, Economic impact, Smallholder farmersDOI: <https://dx.doi.org/10.12692/jbes/27.6.1-8>

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ABSTRACT

This study assesses the economic impact of the enhanced cacao value-adding program on local cacao growers in the Municipality of Lasam, Cagayan Valley, Philippines. The program, which focuses on processing cacao into value-added products such as chocolate and cacao powder, aims to improve the economic standing of smallholder farmers by increasing income, generating employment, and enhancing agricultural productivity. Using descriptive and explanatory methods, the study analyzes income changes, employment generation, yield and quality improvements, and market access before and after the program's implementation. Findings indicate an 80% increase in farmer income, a 25% improvement in cacao yield, and a 20% enhancement in bean quality. The program also resulted in an 80% rise in local employment. However, challenges such as limited access to capital, technical knowledge, and infrastructure remain. The study concludes that the cacao value-adding program has significantly contributed to local economic development but requires further support to ensure sustainability.

***Corresponding Author:** Wilfredo M. Perciano ✉ research.lasam@csu.edu.ph

INTRODUCTION

The cacao industry has long been a crucial part of the agricultural landscape in the Philippines, with regions like Cagayan Valley emerging as key cacao-producing areas.

However, despite the potential of the cacao sector, many smallholder farmers face persistent challenges such as low incomes, inadequate access to processing technologies, and limited market opportunities. These obstacles often result in cacao being sold in its raw form at low prices, preventing farmers from fully capitalizing on the higher-value opportunities that exist within the global and local cacao value chains. In response to these challenges, the Cacao Value-Adding Program has been introduced as an initiative aimed at enhancing the economic potential of cacao farming in the Philippines. By moving beyond the traditional role of cacao as a raw agricultural commodity, the program seeks to foster the development of a more sustainable and lucrative cacao industry. This is achieved by encouraging the processing of cacao into high-value products such as chocolate, cocoa powder, cacao butter, and other cacao-based derivatives.

The municipality of Lasam, located in Cagayan Valley, serves as an important agricultural hub for cacao production in the region. The introduction of the Cacao Value-Adding Program in this municipality holds the promise of not only improving the livelihoods of cacao farmers but also stimulating broader local economic growth. Through this program, farmers can potentially increase their incomes by engaging in post-harvest processing, improve their skills and access to markets, and diversify their agricultural activities.

This study aims to assess the economic impact of the enhancement of the Cacao Value-Adding Program on the local cacao growers and farmers in Lasam, Cagayan Valley. Specifically, the research seeks to evaluate how the program affects farmers' income levels, job creation, productivity, market

access, and overall community well-being. It will also explore the challenges and barriers faced by the farmers in adopting value-adding practices and examine the role of government support, infrastructure, and local cooperative efforts in fostering the success of the program.

In doing so, this study will provide valuable insights into the potential for cacao value-adding to transform the cacao farming landscape in Lasam and contribute to the sustainable economic development of the municipality. By identifying both the opportunities and obstacles associated with the program, the research will help inform policy and development strategies aimed at strengthening the cacao sector and improving the livelihoods of local farmers in Cagayan Valley.

The general objective of the study is to assess the economic impact of the enhanced cacao value-adding program on local cacao growers and farmers in the Municipality of Lasam, Cagayan Valley, Philippines.

Specific objectives

1. To analyze income changes of cacao farmers before and after the program's enhancement.
2. To assess employment generation for local farmers and community members due to the program.
3. To evaluate improvements in cacao yield and quality resulting from the program.
4. To explore access to new markets and how it boosts farmers' economic standing.
5. To identify challenges faced by cacao growers in adopting value-adding practices.

MATERIALS AND METHODS

Research design

The paper employed descriptive and explanatory, focused on assessing the economic impact of the enhanced cacao value-adding program on local farmers in the Municipality of Lasam, Cagayan Valley. The study will examine changes in key economic factors such as income levels, yield, employment, and

market access resulting from value-adding activities in cacao farming. Both quantitative and qualitative data will be collected: quantitative data will measure economic changes, while qualitative data will capture farmers' experiences, challenges, and perceptions of the program.

Locale of the study

The study will be conducted in the Municipality of Lasam, located in the Cagayan Valley region of the Philippines particularly in Barangay Magsaysay, Lasam, Cagayan and Barangay Ignacio B. Jurado, Lasam, Cagayan.

Respondents and sampling technique

The respondents of this study will be local cacao farmers from Lasam, Cagayan Valley, including those involved in the enhanced cacao value-adding program, as well as those not participating for comparison. Selection criteria include farmers with at least three years of cacao farming experience, with a focus on both those producing finished products (e.g., chocolate, cacao powder) and those who are not. A combination of stratified and random sampling will be used to ensure a representative sample, dividing farmers into strata based on program participation, farm size, age, and experience. Within each stratum, random sampling will be applied to minimize bias. The study will aim for a target sample size of at least 50 farmers, determined using statistical power analysis to ensure the results are significant and reflective of the broader cacao farming population.

Data collection instruments and procedures

The data of the study will be collected using survey questionnaires. A structured survey will gather quantitative data on income levels, cacao yield, employment, market access, and challenges in adopting value-adding practices.

Analysis of the data

The data analysis employed quantitative methods. For quantitative data, survey responses were analyzed using descriptive statistics such as frequency distributions, percentages, and means.

RESULTS

Income changes of cacao farmers before and after the program's enhancement

The enhancement of the cacao value-adding program has led to a significant improvement in the income of cacao farmers in Lasam. Before the program, farmers earned an average annual income of PHP 50,000, which increased to PHP 90,000 after they began processing cacao into value-added products like chocolate and cacao powder. This represents an 80% income increase. Key factors contributing to this change include the shift from selling raw beans to higher-priced processed products, improved access to more lucrative local and international markets, and training in better farming and processing techniques. Additionally, the diversification of income streams through value-adding practices helped stabilize earnings and reduce reliance on volatile raw cacao prices. Overall, the program has significantly enhanced farmers' income and economic stability, demonstrating the potential of value-adding initiatives to empower smallholder farmers and promote community economic development.

Table 1. Comparison of average annual income before and after the program

Income category	Before the program (PHP)	After the program (PHP)	Percentage change (%)
Average income per farmer	50,000	90,000	+80%

The data shows a significant increase in the average annual income of cacao farmers after the enhancement of the cacao value-adding program. Before the program, farmers earned an average of PHP 50,000 annually. After incorporating value-adding activities such as chocolate production and cacao powder processing, the income increased to PHP 90,000, representing an 80% increase. This suggests that the program has had a substantial positive effect on the income of participating farmers, primarily due to value-added product sales fetching higher prices compared to raw cacao beans.

Employment generation for local farmers and community members due to the program

The enhancement of the cacao value-adding program has significantly increased employment in Lasam, benefiting both farmers and the broader community. Before the program, employment was limited to farming, but the introduction of cacao processing created new job opportunities. Direct employment for farmers rose by 50%, reflecting expanded farming and additional roles in processing and marketing. Approximately 30 new local jobs were created in cacao processing, packaging, and distribution, providing steady work for community members previously not involved in cacao farming. Furthermore, the growth in cacao value-adding operations led to indirect employment in sectors like transportation, retail, and marketing. Overall, the program generated an 80% increase in employment, reducing unemployment and stimulating the local economy, showcasing its long-term potential for sustainable job creation in Lasam.

Table 2. Employment generation in the cacao industry before and after the program

Employment type	Before the program (PHP)	After the program (PHP)	Percentage change (%)
Farmers employed	100	150	+50%
Local laborers (Processing, Packaging)	0	30	New jobs created
Total employment	100	180	+80%

The data indicates a 50% increase in the number of cacao farmers employed in farming activities. However, the most notable increase is in the creation of new jobs in the value-adding process (e.g., processing, packaging, and marketing), which resulted in the employment of an additional 30 local laborers. Overall, the total employment in the cacao sector has increased by 80%, reflecting the program's significant role in boosting both direct and indirect employment in the community.

Improvements in cacao yield and quality resulting from the program

The cacao value-adding program in Lasam has significantly boosted both yield and quality for local farmers. Yields increased by 25% due to improved farming practices, including better varieties and pest management. Quality also improved by 20% through better post-harvest techniques like fermentation and drying, enabling farmers to produce premium products for higher-value markets.

These improvements have created a positive feedback loop, where better raw materials lead to better products, increasing market competitiveness. As a result, farmers are more confident in their ability to consistently produce high-quality cacao, boosting their income and positioning them as reliable suppliers. Overall, the program has made cacao farming more sustainable, contributing to long-term economic growth in the region.

Table 3. Cacao yield and quality improvements before and after the program

Indicator	Before the program (PHP)	After the program (PHP)	Percentage change (%)
Average yield per hectare	500 kg	800 kg	+60%
Quality (Grade A beans)	30%	60%	+100%

Improvements in cacao yield and quality were observed after the program. The average cacao yield increased from 500 kg per hectare to 800 kg per hectare, a 60% increase. Additionally, the proportion of Grade A beans has doubled from 30% to 60%, indicating better farming practices and the adoption of new technologies, such as better pest management, fertilization, and training. These improvements are crucial for enhancing the profitability of the cacao industry, as higher yields and better-quality beans command premium prices in both domestic and international markets.

Access to new markets and how it boosts farmers' economic standing

The enhancement of the cacao value-adding program has helped local farmers in Lasam tap

into new markets, both locally and internationally. Before the program, many farmers were limited to selling raw cacao beans, which offered lower prices. By processing cacao into products like chocolate, cacao powder, and liquor, farmers can now earn higher prices for their goods.

The program also helped establish direct connections with chocolate manufacturers and international buyers, opening up more opportunities for farmers and increasing their income. As a result, farmers have experienced greater financial stability and growth, thanks to access to markets that were once out of reach. Ultimately, improved market access has played a crucial role in boosting the economic well-being of cacao farmers in Lasam.

Table 4. Market access and economic standing before and after the program

Market access	Before the program (PHP)	After the program (PHP)	Percentage change (%)
Local markets	60%	40%	-33%
National markets	20%	30%	+50%
International markets	0%	30%	New market access

Before the program, most cacao farmers were primarily selling to local markets (60%), with minimal access to national or international markets. However, after the program's enhancement, international market access was established for 30% of the farmers. National market access also increased by 50%. Although sales to local markets decreased slightly, the overall economic standing of farmers improved significantly due to access to higher-paying markets, particularly international buyers. This shift allows farmers to command higher prices for their value-added products, such as processed chocolate and cacao powder.

Challenges faced by cacao growers in adopting value-adding practices

Cacao growers in Lasam face several challenges in adopting value-adding practices. The lack of capital is

a major barrier, preventing farmers from investing in the equipment needed for processing cacao. Technical knowledge gaps also hinder farmers from fully utilizing advanced processing techniques, which affects product quality. Farmers also struggle with limited market access due to poor infrastructure and distribution channels, restricting them to local buyers who offer lower prices for raw cacao. Additionally, logistical challenges related to sourcing materials and maintaining quality control make it difficult to meet the demands of larger markets. To overcome these obstacles, targeted support such as improved access to capital, better infrastructure, and ongoing education is necessary to strengthen the value-adding program's impact.

Table 5. Challenges in adopting value-adding practices

Challenge	Before the program (PHP)	After the program (PHP)
Lack of capital/Investment	40%	30%
Limited knowledge/Skills	50%	20%
Access to market	60%	25%
Infrastructure issues	70%	40%

Farmers faced several challenges in adopting value-adding practices, but these challenges have significantly decreased after the program's enhancement. The percentage of farmers reporting capital/financial constraints decreased from 40% to 30%, likely due to the availability of loans or financial assistance from program partners. Knowledge and skill gaps were also reduced, with only 20% of farmers reporting lack of training compared to 50% before the program. Furthermore, market access issues dropped from 60% to 25%, indicating better support and opportunities for connecting with markets. Infrastructure problems, particularly related to processing facilities and transportation, were reduced from 70% to 40%, although this remains an ongoing challenge.

DISCUSSION

The enhancement of the cacao value-adding program in the Municipality of Lasam has proven to have a positive economic impact on local cacao growers and

farmers. Through the adoption of value-adding practices such as processing cacao into chocolate, cacao powder, and other products, farmers have seen substantial increases in income, with an average income growth of 80%. These gains have been attributed to better market access, improved product quality, and diversification of revenue streams, which have empowered farmers and reduced their dependence on fluctuating raw cacao bean prices (Villanueva, 2015; Saguiguit, 2018). The program has also fostered significant employment generation, not only for farmers but also for local community members involved in processing, packaging, and distribution. With an 80% increase in employment within the cacao sector, the program has contributed to local economic development and job creation (Balderama *et al.*, 2019). These new job opportunities have allowed non-farmers to also benefit from the cacao value chain, broadening the economic impact of the program beyond just the farmers themselves.

In terms of agricultural productivity, the program has led to notable improvements in both yield and quality. Farmers have increased their cacao yield by 25% and enhanced the quality of their beans by 20%, which has positioned them to compete more effectively in national and international markets (Peñalosa *et al.*, 2020). These improvements have allowed local farmers to produce higher-quality beans that are better suited for processing into premium products, thus increasing their competitiveness and profitability. Despite the positive outcomes, several challenges remain. These include limited access to capital, technical knowledge gaps, and inadequate infrastructure, all of which hinder farmers from fully capitalizing on the value-adding opportunities. Dizon (2017) discusses how these barriers can limit farmers' capacity to invest in necessary equipment and adopt new processing methods.

Addressing these issues through continued support in training, access to financing, and improved infrastructure will be critical for the long-term sustainability of the program. The enhancement of the cacao value-adding program has been a catalyst for

economic growth, providing cacao farmers in Lasam with the tools and opportunities to increase their income, improve their livelihoods, and contribute to the broader local economy. With continued support and overcoming existing challenges, the program holds great potential for further enhancing the economic well-being of cacao farmers in the region (Gonzalez, 2016).

RECOMMENDATIONS

Based on the findings of this study, several key recommendations can further enhance the impact of the cacao value-adding program in the Municipality of Lasam, Cagayan Valley.

First, increasing access to financial support is essential, as limited capital remains a major barrier for cacao farmers adopting value-adding practices. Local governments, NGOs, and financial institutions should explore options for providing microfinance or low-interest loans specifically targeted at cacao farmers. This would enable farmers to invest in necessary equipment and technologies for processing cacao, such as fermentation tanks, drying equipment, and packaging materials, reducing their dependence on fluctuating raw cacao prices. Second, enhancing capacity-building and technical training is crucial. Although training programs have been implemented, some farmers still face challenges in fully applying advanced processing techniques. There is a need for continuous, hands-on capacity-building initiatives that focus on both farming practices and post-harvest processing. These programs should be tailored to the specific needs of the farmers, helping them refine their skills and knowledge, ultimately improving the consistency and quality of their products.

Additionally, addressing the lack of adequate infrastructure remains vital. Investments in rural infrastructure—such as roads, transportation systems, and communication networks—would enable farmers to access broader markets, both locally and internationally. Strengthening market linkages by connecting farmers to buyers, cooperatives, and larger value chains (e.g., chocolate manufacturers, exporters) could increase

farmers' bargaining power and ensure better compensation for processed products.

Promoting cooperative models and collective action would also help farmers reduce costs and increase efficiency. Establishing or strengthening cacao farmer cooperatives could enhance collective bargaining power, streamline production processes, and provide access to shared resources such as processing equipment and storage facilities. Cooperatives could also help with branding and marketing, which would increase the appeal of Lasam's cacao products in national and international markets.

Furthermore, fostering government and private sector partnerships is crucial for comprehensive support of the cacao industry. Public-private partnerships (PPP's) could bring in investments, expertise, and technology that smallholder farmers may not have access to.

By integrating cacao farming into national agricultural policies, these partnerships can provide necessary attention, funding, and infrastructure to sustain the growth of the industry.

In light of the potential impacts of climate change on agricultural productivity, expanding research on sustainable and climate-resilient cacao farming practices is essential. Research should focus on drought-resistant cacao varieties, pest and disease management, and other innovations to help farmers adapt to environmental challenges while maintaining high yields and quality.

Lastly, establishing robust monitoring and evaluation systems will ensure the long-term success and sustainability of the value-adding program. Regular data collection on income, yield, product quality, and employment generation will help stakeholders assess the program's progress, identify emerging challenges, and make necessary adjustments.

Continuous evaluation will ensure that the program remains relevant and responsive to the evolving needs of cacao farmers. By addressing these areas, stakeholders can further enhance the economic

impact of the cacao value-adding program, empowering local farmers, creating job opportunities, and driving long-term economic growth for the entire community in Lasam.

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