



# Agri-Fishery Practices through Product Resource Management, Value Addition and Commercialization Enhancement Project of Villages in Daram, Samar

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**Abstract:** The study revealed the prevailing conditions of agri-fishery practices and value-added production in Barangays Marupangdan and Astorga in Daram, Samar. Findings indicated that Barangay Marupangdan remained dependent on traditional crop and fish harvests with minimal post-harvest technology, no value-added processing, and limited market access, resulting in low profit margins. Overproduction of hawol-hawol (Bali Sardinella) and vegetables led to waste due to the absence of storage, processing, and market linkages. In contrast, Barangay Astorga demonstrated active value addition through products galunggong-based fish balls, significantly increasing income per unit sold. Porter's Value Chain analysis showed that Astorga's community benefited from interventions by DTI and LGU Daram in providing equipment, packaging materials, and access to trade fairs. However, both barangays still lacked essential post-harvest facilities, ICT integration, and formal marketing strategies. Women in both communities actively participated in agri-fishery production, but their associations in Marupangdan remained unregistered, limiting support opportunities. Farmers and fisherfolk expressed willingness to adopt technology and undergo training, showing potential for scaling up productivity. The study highlighted the importance of institutional aid and local government support in capacitating communities to develop sustainable agri-fishery value chains. With targeted interventions, Marupangdan could replicate Astorga's best practices to enhance food security, income, and community resilience.

**Keywords:** Agri-fishery production and management; value addition; porter's value chain; market access; sustainable agriculture

## 1. Introduction

Asia bears a major share of global hunger. In 2018, 513.9 million Asians were undernourished – over 60% of the world's hungry. Although this number declined to 384.5 million by 2023, the region still accounts for more than half of the global undernourished population [1]. A contributing factor to this persistent hunger is the high proportion of income that low-income households in Asia allocate to food. For instance, households in the Philippines spend approximately 41.9% of their income on food [2]. This substantial expenditure leaves limited resources for other essential needs, making these households particularly vulnerable to fluctuations in food prices. As a result, they are

significantly impacted by higher and more volatile food prices, which have hindered progress in reducing poverty across the region. With Asia becoming increasingly urbanized and prosperous, upward pressure on food prices is expected to persist. If food supply fails to keep pace with rising demand and agricultural productivity challenges are not addressed, food security will likely remain a persistent concern both globally and regionally. This could potentially threaten Asia's long-term economic growth [3]. Addressing hunger in Asia necessitates not only increasing food production but also implementing policies that enhance food affordability and accessibility for the poor. Without such measures, the region's progress in reducing poverty and hunger may remain stagnant. The community must harness innovation, marketing, and the commercialization of agri-aqua raw materials to create value-added products.

The Cooperative Development Authority [4] reported that among 9,432 cooperatives, only four are engaged in agriculture and three in fisheries. This suggests either a lack of interest in these sectors or a failure to report cooperative activities, which highlights gaps in engagement with agriculture and fisheries at the cooperative level. Policymakers must address several critical challenges to support community development. First, revitalizing growth in agricultural productivity is essential, especially in the face of climate change. Second, Asia's 350 million small farmers—typically working on less than two hectares—must be integrated into modern food value chains. Third, persistent malnutrition among preschool children has long-term consequences on human capital. Livelihood is essential for survival, as it fuels the daily lives of people. Agriculture remains a major source of livelihood globally, but fewer people—particularly in rural areas—are engaging in farming activities. This trend threatens the sustainability of food security. Sustainable strategies such as the intensification of agri-aqua production and livelihood have shown promise. Utilizing local resources for livelihood purposes can stimulate the national economy. However, despite the availability of rich natural resources, many communities lack the knowledge or infrastructure to process and utilize them effectively [5]. Many areas still rely on traditional farming methods, despite the availability of advanced agricultural technologies that could boost productivity and streamline marketing. A study [6] emphasized that natural resources are underutilized. Revisiting their potential through development projects could enhance agri-aqua entrepreneurial activities. Government extension programs, especially when partnered with private companies, play a significant role in supporting vulnerable groups such as barangay associations, women, and the unemployed [7]. Common challenges include a lack of knowledge, capital, and agricultural inputs, as highlighted by World Vision.

Projects focused on farming and fishing education, scientific practices, and entrepreneurial training can empower communities. Teaching value addition—through product creation, branding, packaging, and marketing—enhances income and sustainability. Successful value addition requires access to training, resources, market linkages, and an environment that supports innovation and entrepreneurship. Cultural authenticity and sustainable practices are also crucial. An author [8] noted that marketing is a major challenge for value-added products. Poor farmers often lack the knowledge to market their products effectively, leading them to sell raw materials at low prices. Training in branding, quality assessment, retailing, and sustainable production is essential to improve profitability and market competitiveness. Barangay Marupangdan and Barangay Astorga are two coastal communities situated in the municipality of Daram, Samar, Philippines. As of the 2020 Census, Marupangdan had a population of 573 individuals, comprising approximately 1.38% of Daram's total population, while Astorga had a population of 1,849, representing about 4.44% of the municipality's populace [9]. Both barangays are located at low elevations—Marupangdan at 16.1 meters and Astorga at 12 meters above sea level—making them naturally suited for agri-fishery activities. The main sources of livelihood in these communities include farming and small-scale fishing, which are typical economic activities across the municipality of Daram. However, these sectors face numerous challenges, particularly the degradation of marine resources due to overfishing and illegal practices, which threaten the long-term viability of fishing as a livelihood [4].

Poverty remains a persistent issue in the area. In 2003, Daram registered a poverty incidence of 77.96%, which gradually declined to 38.80% by 2021. Despite this improvement, poverty levels in the municipality continue to exceed the national average, indicating that a significant proportion of residents in Marupangdan and Astorga still experience economic hardship [10]. In response, various development

interventions have been implemented to improve the quality of life in these barangays. Programs like the “SAVE-FAITH” initiative have promoted transformative governance, sustainable agriculture and fishery practices, and better access to health, nutrition, and livelihood opportunities [4]. These efforts aim to empower local communities by building their capacity for value addition, entrepreneurship, and sustainable resource management. This research contributes to agricultural development by promoting the use of technologies like the “three sisters” intercropping system. The goal is to help communities transition from poverty to productivity by establishing viable agribusinesses.

Agri-fishery practices play a vital role in achieving community sustainability. They help maintain environmental balance, ensure food security, create jobs, and generate income. This can improve living standards and contribute significantly to poverty reduction. To conduct a value chain analysis of the agri-science sector to assess and optimize the journey of products from production to market through stakeholder collaboration and value chain mapping. To identify bottlenecks and opportunities for value addition and commercialization within the agri-fishery value chain, thereby providing comprehensive insights into the agri-fishery ecosystem.

## 2. Materials and Methods

### 2.1 Research Design

This study employed a qualitative-descriptive research design, specifically utilizing Value Chain Analysis (VCA) and Focus Group Discussions (FGDs) to explore the agri-fishery production, processing, and marketing practices of local communities. This design enabled a comprehensive understanding of the value chain and the identification of gaps and opportunities for value addition and commercialization. It was particularly suited for contextualizing local knowledge, practices, and perspectives in agricultural development [11]. This is a qualitative study with descriptive elements; no statistical tests were performed. Quantitative estimates provided are illustrative and not inferential. This study utilized Porter’s Value Chain Analysis (1985) to examine the sequence of value-adding activities in the local agri-fishery enterprises of Barangay Astorga (galunggong fish balls). The framework guided the identification of both primary activities (inbound logistics, operations, outbound logistics, marketing and sales, and service) and support activities (infrastructure, human resources, technology, and procurement). Data gathered from interviews, focus group discussions, and field observations were categorized according to these value chain components. The analysis focused on: Identifying gaps and inefficiencies in each stage of the chain, Mapping cost and profit contributions, and Assessing the institutional and technical support available to producers.

### 2.2 Participants and Sampling Technique

The participants consisted of members from the Farmers Association and Women’s Association in Barangay Marupangdan and Barangay Astorga in Daram. A purposive sampling technique was employed to select individuals actively involved in agricultural and fishery activities. 30 participants, including farmers, fisherfolk, and women, were selected based on their involvement in farming and small-scale fishing. Selection was also guided by their availability and willingness to participate in the FGDs. A total of 30 participants were selected to ensure diversity across livelihood sectors (farming, fishing, and processing) and gender representation. This size allowed for in-depth discussions while maintaining manageability during FGDs.

**Table 1.** Demographic Profile

Variable	Frequency	Percentage
Gender (Male/Female)	14 / 16	47% / 53%
Age Range	25–60 years	—
Occupation	Farmers (18), Fisherfolk (7), Women Entrepreneurs (5)	—
Barangay	Marupangdan (15), Astorga (15)	—

### 2.3 Research Instrument

The primary research instruments were semi-structured FGD guides and value chain mapping tools. The FGD guide included open-ended questions focused on current agricultural practices, challenges in production and marketing, and opportunities for value addition. The value chain mapping tool helped identify key stages in the agri-fishery value chain and determine bottlenecks and inefficiencies across the system.

### 2.4 Data Gathering Procedure

The research team first sought permission and support from the Local Government Unit (LGU) of Daram, followed by coordination with community associations. An initial orientation was conducted to explain the purpose and scope of the study. Two FGDs were conducted: the first focused on identifying current practices and challenges, and the second on exploring strategies for value addition and marketing. All sessions were facilitated by trained moderators and documented through note-taking and audio recordings (with consent).

### 2.5 Data Analysis Procedure

Data collected from FGDs were transcribed and subjected to thematic analysis, identifying recurring themes, issues, and insights. Concurrently, Value Chain Analysis was conducted by mapping the stages from production to market, highlighting areas for improvement, and recommending potential interventions. Findings were cross-referenced with existing literature and used to inform the next phase of project implementation.

### 2.6 Data Validation

To ensure credibility, triangulation was achieved through multiple FGDs and cross-validation with LGU records. Member checking was conducted by sharing summaries of findings with participants for verification.

### 2.7 Ethical Considerations

The study adhered to ethical research standards from Samar State University, namely the Institutional Human Research Ethics Committee (IHREC). Informed consent was obtained from all participants, who were assured of the confidentiality and anonymity of their responses. Participation was voluntary, and participants were informed of their right to withdraw at any point without consequence. The research team also ensured that no physical or psychological harm was posed to participants throughout the process. Ethical clearance was sought from the appropriate institutional review board before data collection.

## 3. Results and Discussion

### 3.1 Value Chain Framework of Barangay Marupangdan, Daram, Samar

#### 3.1.1 Community Production and Marketing Practices

Figure 1 presents the current value chain analysis of the existing agri-fishery resources in Barangay Marupangdan, Daram, Samar. Based on data gathered from community participants, several key characteristics and gaps were identified throughout the value chain. There is an absence of value-adding activities that could enhance the productivity and marketability of raw products. The community currently does not use any agri-fishery technology during production and lacks fabricated tools for post-harvest processing or value addition. Although a potential Post-Harvest and Processing Facility (PHPF) exists, it remains non-functional and requires substantial repair. Marketing of agricultural and fishery produce is limited to nearby localities such as Catbalogan and selected municipalities, restricting profitability. Transportation costs are high, limiting return on investment. Furthermore, participants reported no Information, Education, and Communication (IEC) activities from government agencies to enhance local capacity. Surplus harvests often go to waste due to a lack of market access, though some overripe produce is recycled into organic fertilizer.

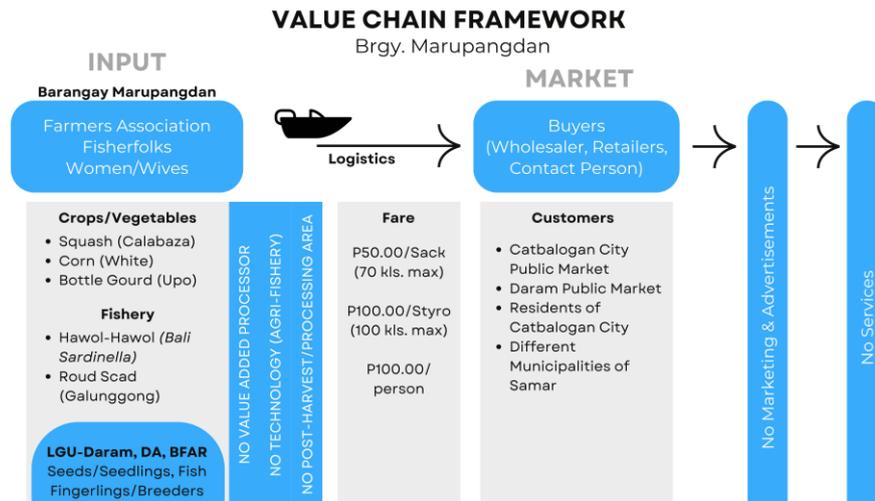


Figure 1. Value Chain Framework of Barangay Marupangdan

3.1.2 Implications for Value Chain Efficiency

The lack of value-adding activities and market linkages reflects inefficiency across the value chain. As supported by prior studies [12], value addition and the integration of technology can significantly improve income stability and market competitiveness. The limited use of ICT and logistics support constrains producers’ access to broader markets, while the absence of pre-harvest contractors weakens production continuity. A comparison with Barangay Astorga reveals the potential benefits of community-led processing and digital marketing. Their success illustrates that integrating value-added strategies within Marupangdan can improve profitability and reduce post-harvest losses.

3.2 Value Chain Analysis for Galunggong in Barangay Astorga

3.2.1 Results: Application of Porter’s Value Chain Analysis

Figure 2 illustrates the value chain analysis for Galunggong (Round Scad) Fish Balls using Porter’s framework. The analysis evaluates both primary activities (inbound logistics, operations, marketing, sales, and service) and support activities (infrastructure, technology, and human resource management). In Barangay Astorga, galunggong is converted into fish balls, increasing total product value from ₱100.00 to ₱250.00 per kilo. Table 2 presents the cost-benefit analysis, excluding labor costs, which are governed by member participation stipulations. These figures highlight the profitability potential of value-added processing. However, without technological support, product standardization, and reliable logistics, sustainability remains uncertain. Support activities, such as infrastructure and technology, are critical gaps in both barangays. Porter’s framework underscores that improving these areas would enhance efficiency, quality, and market access. Astorga’s adoption of community-led processing demonstrates how local value chains can evolve toward self-sustaining enterprises. Replicating these practices in Marupangdan, alongside institutional support (DTI, LGU, and DA), can bridge the gap between production and profitability.

Table 2. Simplified Cost-Benefit Analysis

Product	Raw Material Cost	Processing Cost	Packaging Cost	Transport Cost	Total Cost	Selling Price/kg	Value Added
Galunggong (GG) Fish Balls	₱100.00	₱50.00	₱20.00	₱30.00	₱200.00	₱250.00	₱150.00

Note: Value added refers to the difference between the selling price and the raw material cost, reflecting the economic value created through processing rather than net profit. Labor costs are excluded in accordance with association-based participation stipulations.

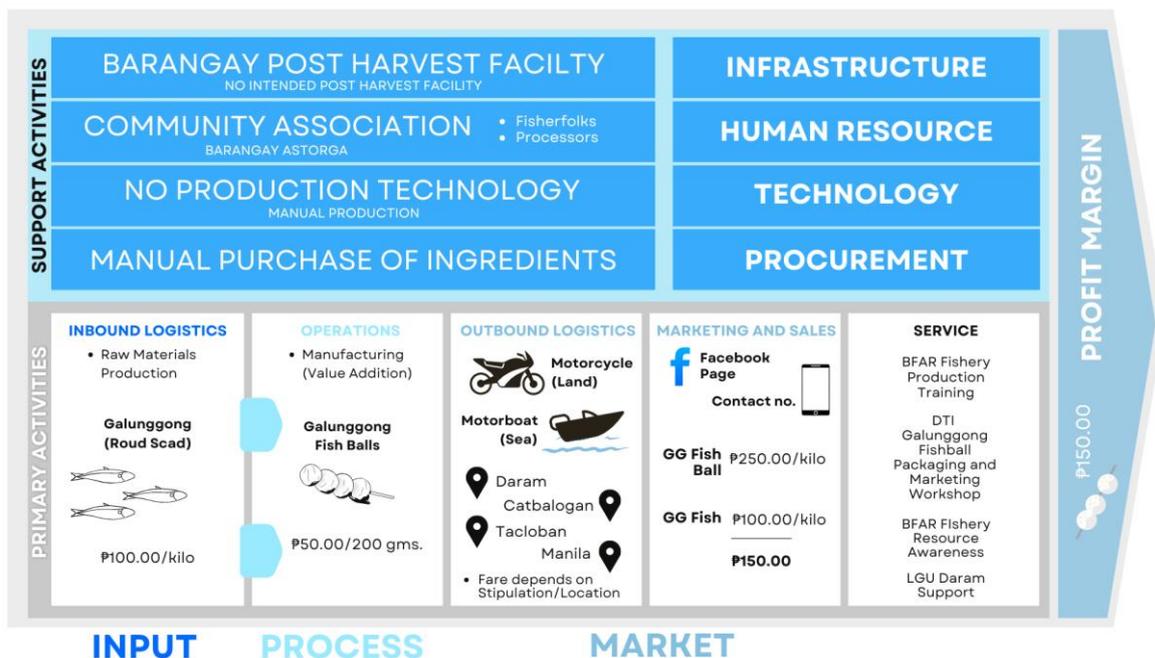


Figure 2. Value Chain Framework of Barangay Astorga

### 3.3 Community Human Resource Management

In Barangay Marupangdan, the Barangay Farmers Association is the only formally registered organization. The Women’s Association is pending DOLE registration. Farming and fishing are primarily male-led, though women contribute significantly when available. The Farmers Association president oversees logistics and marketing. Meanwhile, Astorga’s registered association engages in value-added processing supported by DTI and the LGU. The organizational gap between the two barangays indicates differing stages of institutional readiness. Astorga’s formalization and external support networks have enabled sustained production. Marupangdan’s informal structures, while participatory, require technical and administrative strengthening to access similar benefits. Strengthening women’s involvement in processing could enhance social inclusion and community capacity.

### 3.4 Agri-Fishery Production Management

Barangay Marupangdan produces squash, corn, and bottle gourd, with squash sold at ₱20/kg and bottle gourd at ₱15/kg. Transport cost per sack (₱50) and lack of proper packaging limit profits. Marine resources include hawol-hawol (Bali sardine) and galunggong, with seasonal surpluses leading to waste. Farmers have requested training on organic hybrid seeds and post-harvest processing. These findings highlight inefficiencies caused by logistical constraints and a lack of value-adding practices. As noted in related literature [15], rural communities benefit economically when post-harvest losses are minimized and value-addition is introduced. Improved infrastructure and access to hybrid seeds can enhance productivity and resilience.

### 3.5 Agri-Fishery Technology

Farmers and fishers lack access to mechanized tools, ICT applications, or post-harvest equipment. Production remains manual, relying on traditional techniques. Neighboring Astorga has acquired equipment and packaging tools from DTI and LGU Daram. Technology adoption is essential for production efficiency and quality assurance. Consistent with [16], limited awareness and cost barriers hinder technology use. Investment in training and machinery is a prerequisite for modernizing the agri-fishery systems in Marupangdan.

### 3.6 Value-Added Agri-Fishery Food Production and Processing

Marupangdan has not yet implemented structured value-adding activities. Astorga, however, has established production of Galunggong Fish Balls, sold at ₱50 per 200-gram pack, respectively. The contrast between the two barangays shows the transformative effect of training and capital support. Processed products typically yield greater profit margins compared to raw materials, supporting the strategic transition toward value-added forms of entrepreneurship.

Similar findings were reported by Mustacisa, who demonstrated that participatory, science-based interventions in root crop production significantly improved yields and enhanced value creation at the community level, reinforcing the role of localized innovation in strengthening agri-fishery value chains [19].

### 3.7 Product Advertisement and Marketing

Barangay Marupangdan lacks formal marketing initiatives. No advertisement or government support currently exists. Astorga, by contrast, benefits from DTI and LGU-led promotion during trade fairs and social media campaigns. Effective marketing and communication are essential for sustaining agri-fishery enterprises [17,18]. Establishing digital presence, market linkages, and promotional materials can empower local producers to access wider markets and stabilize income. This study was limited to two barangays in Daram, Samar; thus, findings may not represent all coastal communities in the region. The cost analysis excluded labor and indirect expenses. Future research should include longitudinal data and broader geographic coverage.

## 4. Conclusions

This study revealed the critical gaps and opportunities in the agri-fishery value chain of Barangay Marupangdan and Barangay Astorga, highlighting the communities' strong reliance on farming and fishing as primary livelihoods. Despite the abundance of natural resources and initial steps toward value-added production—such as galunggong fish balls—there remains limited access to agri-fishery technologies, post-harvest facilities, and effective marketing strategies. Value chain analysis showed that most agricultural and fishery products are sold as raw goods, significantly limiting income potential for local producers. The lack of processing centers, packaging technology, and entrepreneurial skills further constrains these communities from fully capitalizing on value addition. However, the research also uncovered a high level of community interest and willingness to adopt innovative practices, particularly among women and local associations. The findings underscore the need for targeted interventions such as technology provision, skills training, product development support, and improved market linkages. Strengthening institutional support from LGUs, DTI, DA, Bureau of Fisheries and Aquatic Resources (BFAR), and other stakeholders is crucial to building sustainable agrifishery enterprises. The development of inclusive and localized value chain strategies can help transform subsistence farming and fishing into viable economic activities. This shift has the potential to improve food security, generate income, and contribute to poverty reduction in rural coastal communities.

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