



The Anahaw Fan Industry in Sta Cruz, Canaman, Camarines Sur

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Abstract

The findings indicated that the anahaw fan industry in Sta. Cruz, Canaman, Camarines Sur was predominantly composed of long-established producers, with the majority engaged in fan-making for more than sixteen years. This longevity reflected the deep cultural embeddedness of the craft and the role of inherited skills in sustaining production over time. However, despite extensive experience, most producers operated with limited capitalization, small labor forces, and modest production volumes, indicating that the industry remained micro-scale in nature. The dominance of multiple and informal sources of capital suggested that producers relied heavily on personal networks and borrowing rather than institutional financing. This financial structure constrained the ability of producers to expand operations, invest in improved tools, or diversify product lines. Similarly, the limited number of workers per enterprise reinforced the family-based character of production and highlighted labor constraints that restricted scalability. Market participation was largely confined to local and nearby areas, with minimal engagement in digital or export markets. This limited market diversification reduced exposure to broader demand opportunities and increased vulnerability to local market fluctuations. Taken together, these findings showed that while the anahaw fan industry exhibited continuity and resilience at the household level, structural limitations in capital, labor, and market reach constrained enterprise growth and modernization.

Keywords:

Anahaw fan industry, sustainability, economic, social, environmental, challenges, strategic recommendation.

INTRODUCTION

Handicrafts and cultural industries constitute a vital segment of the global creative economy, contributing significantly to employment generation, income creation, and cultural

preservation. The United Nations Conference on Trade and Development reported that the creative economy, which includes traditional crafts, generated over USD 1.1 trillion in global trade and demonstrated resilience amid economic disruptions (UNCTAD, 2022). Similarly, the World Bank emphasized that micro, small, and medium enterprises (MSMEs) account for more than 90 percent of businesses worldwide and provide over half of global employment, underscoring their role in inclusive and sustainable development (World Bank, 2021). Within this context, handicraft enterprises serve not only as economic actors but also as custodians of cultural heritage, particularly in rural and developing economies.

In the Philippines, MSMEs dominate the business landscape and remain central to livelihood generation and community development. According to the Philippine Statistics Authority (2023), MSMEs comprise 99.58 percent of registered enterprises nationwide. The Department of Trade and Industry further highlighted that the handicraft sector plays a critical role in preserving indigenous knowledge, traditional skills, and cultural identity, particularly in rural areas where livelihoods are closely linked to natural resources and inherited craftsmanship (DTI, 2024). Despite their importance, many small-scale handicraft enterprises continue to face persistent challenges, including limited capitalization, weak market access, vulnerability to environmental conditions, and inadequate institutional support, which constrain their long-term sustainability.

One culturally significant handicraft enterprise in the Philippines is the anahaw fan industry. Crafted from the leaves of the anahaw palm (*Saribus rotundifolius*), the national leaf of the Philippines, anahaw fans are valued for their functional use in the tropical climate and their symbolic role in Filipino traditions and festivities. Beyond their cultural significance, anahaw fans provide livelihood opportunities for rural households that rely on manual production methods and generational knowledge transfer. However, similar to other traditional craft industries, the anahaw fan sector remains vulnerable to resource scarcity, climate-related disruptions, limited scalability, and increasing competition from synthetic and mass-produced alternatives.

Within this context, the sustainability of the anahaw fan industry is directly aligned with the United Nations Sustainable Development Goals (SDGs). In particular, the industry contributes to SDG 8 (Decent Work and Economic Growth) and SDG 1 (No Poverty) by providing income-generating opportunities for small-scale, rural producers. Its preservation of traditional craftsmanship and community-based production supports SDG 11 (Sustainable Cities and Communities) through the safeguarding of intangible cultural heritage. Moreover, the industry's reliance on natural resources underscores its relevance to SDG 12 (Responsible Consumption and Production) and SDG 15 (Life on Land), highlighting the importance of sustainable harvesting practices and environmental stewardship. By integrating economic viability, social contributions, and environmental responsibility, the anahaw fan industry reflects localized efforts toward inclusive and sustainable development.

At the local level, Barangay Sta. Cruz in Canaman, Camarines Sur is one of the communities where anahaw fan-making continues to function as both an economic activity and a cultural practice. Many producers in the area have been engaged in the craft for decades, operating with small capital, family-based labor, and localized markets. While this reflects resilience and cultural continuity, it also suggests structural limitations that hinder enterprise growth and modernization. Studies on similar Philippine handicraft industries have documented comparable constraints, including raw material shortages, limited market reach, and inadequate business support mechanisms, despite strong cultural embeddedness (Cuaton, 2023; Decio, 2023).

Although existing literature has extensively examined MSMEs and handicraft industries in the Philippines, scholarly attention has largely focused on export-oriented or cluster-based crafts such as weaving, furniture-making, and bamboo enterprises. Limited empirical research has examined community-level anahaw fan producers, particularly from a sustainability perspective that integrates economic viability, social contributions, and environmental responsibility. Moreover, previous studies have often emphasized cultural preservation without systematically assessing business sustainability and strategic needs.

In response to these gaps, this study aimed to assess the sustainability of the anahaw fan industry in Sta. Cruz, Canaman, Camarines Sur by examining the producers' business profile, evaluating sustainability across economic, social, and environmental dimensions, and identifying the challenges that affect production and livelihood continuity. By providing empirical evidence at the community level, the study sought to contribute to the literature on traditional craft sustainability and to inform policy interventions and development strategies that support both livelihood resilience and cultural preservation.

Research Objectives

This study aimed to assess the level of sustainability of anahaw fan industry in Sta. Cruz, Canaman, Camarines Sur. Specifically, it sought answers to the following:

1. To determine the producers' business profile in terms of years as a maker, capitalization, volume of produce per month, market, and number of workers.
2. To assess the level of sustainability along economic, social, and environmental dimensions.
3. To identify the challenges faced by producers.
4. To propose strategic recommendations as a concrete tool to uplift the anahaw fan industry business.

Scope and Delimitation

This study focused on the anahaw fan industry in Barangay Sta. Cruz, Canaman, Camarines Sur. The respondents were limited to active anahaw fan producers in the barangay during the period of data collection. The study examined the producers' business profiles, sustainability levels across economic, social, and environmental dimensions, and the challenges they encountered in fan-making.

The research employed a quantitative descriptive design and utilized a survey questionnaire as the primary data collection instrument. The analysis was limited to descriptive statistical tools and did not attempt to establish causal relationships among variables. The findings of the study were context-specific and could not be generalized to other handicraft industries or geographic locations without further research.

Literature Review

Handicraft enterprises formed a significant segment of micro, small, and medium enterprises (MSMEs) in developing economies, providing income opportunities while preserving cultural heritage. Prior studies consistently showed that years of operation, capitalization, labor structure, and market orientation were critical determinants of production capacity and enterprise resilience among craft-based MSMEs (Francisco et al., 2025; Sison & Reyes, 2022; Vitug & Alvarez, 2024). Enterprises with longer experience often benefited from accumulated skills, reputation,

and stable customer networks, yet limited capitalization and reliance on family labor frequently constrained scalability and modernization.

Market access further shaped production outcomes. Research indicated that producers serving regional or diversified markets achieved higher output stability compared with those confined to local markets (Parreñas & Dela Cruz, 2023; Eng, 2022). However, many traditional craft producers remained excluded from digital platforms and formal supply chains, resulting in restricted market reach and vulnerability to demand fluctuations (Lestari, 2024; Yadav et al., 2023). These conditions were particularly evident in rural, community-based craft industries where enterprises operated informally and with minimal institutional support.

Sustainability in handicraft enterprises was commonly examined through economic, social, and environmental dimensions. Economic sustainability was reflected in income adequacy, profitability, and customer stability, which enabled producers to sustain household needs and continue operations over time (Zhang et al., 2023; Brogan, 2024). While many craft enterprises generated sufficient income for subsistence, limited access to financial capital and formal credit remained a persistent barrier to growth and innovation (Escueta & Manalo, 2023).

Social sustainability was often the strongest dimension in traditional craft industries. Studies highlighted the role of handicrafts in strengthening community cohesion, preserving cultural identity, and facilitating intergenerational skill transmission (Dizon & Javier, 2022; Reyes & Tan, 2024). These social functions explained why many craft industries persisted despite economic and market constraints. However, declining youth participation and reduced cultural visibility posed risks to long-term continuity (Katongole et al., 2023).

Environmental sustainability in handicraft production was generally associated with the use of natural, biodegradable materials and low-carbon production processes (Kumar & Sethi, 2023). Nonetheless, research also pointed to increasing ecological pressures arising from raw material scarcity, climate variability, and weak resource management systems (Mendoza & Ilagan, 2023; Gurpinar & Tang, 2023). Without sustainable sourcing and conservation practices, the environmental foundation of craft enterprises became increasingly fragile.

Traditional craft producers faced multidimensional challenges that intersected across economic, social, and environmental domains. Financial constraints, lack of formal suppliers, limited labor availability, and inadequate government support frequently restricted production capacity and business expansion (Asilum, 2024; Vitug et al., 2024).

Climate-related disruptions further exacerbated these issues by affecting raw material availability and production processes, particularly in weather-dependent crafts (Yadav, 2022). These challenges highlighted the need for integrated interventions that addressed not only enterprise-level limitations but also institutional and ecological factors.

Theoretical Framework

This study was anchored on a multi-theoretical framework integrating the Resource-Based View (RBV), Porter's Five Forces Model, Elkington's Triple Bottom Line, Dynamic Capabilities Theory, and the Sustainable Livelihoods Framework (SLF).

The Resource-Based View posited that an enterprise’s competitive advantage was derived from its valuable, rare, and inimitable resources (Barney, 1991). In the context of anahaw fan producers, intangible resources such as traditional skills, craftsmanship, and cultural knowledge sustained production despite limited tangible assets like capital and labor.

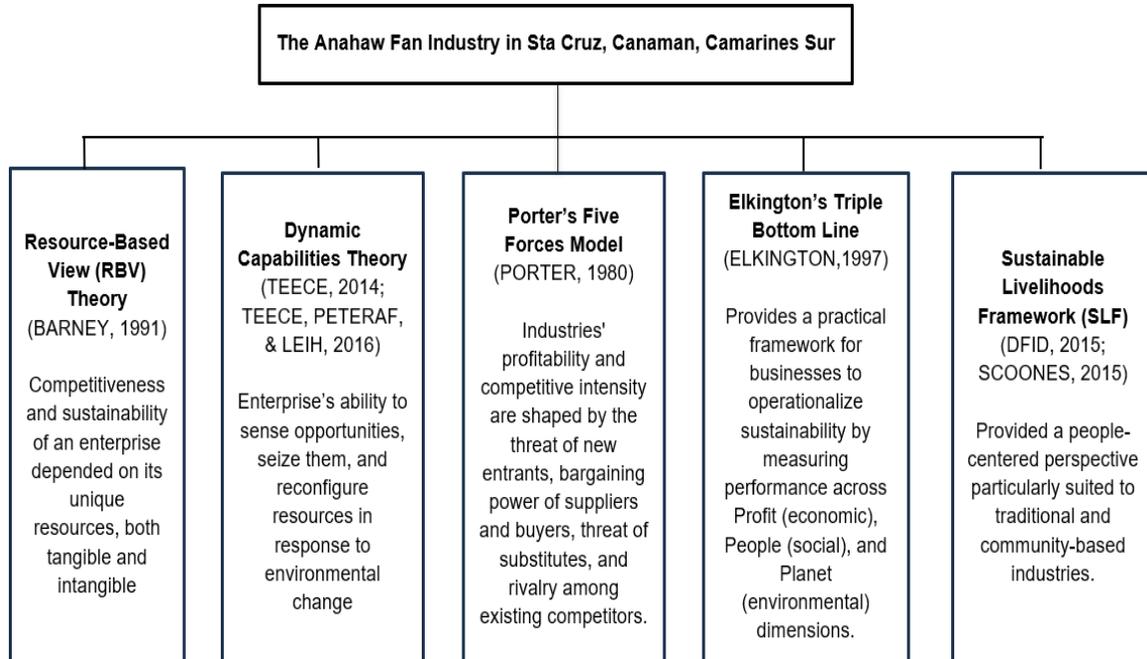


Figure 1. The Theoretical Framework of Anahaw Fan industry

Porter’s Five Forces Model provided insight into the external market environment that shaped industry performance, including buyer power, supplier constraints, competition from substitutes, and barriers to entry (Porter, 1980). This framework explained the competitive pressures faced by anahaw fan producers, particularly from mass-produced and synthetic alternatives.

The Triple Bottom Line framework emphasized the integration of economic viability, social well-being, and environmental responsibility in assessing sustainability (Elkington, 1997). This model directly informed the evaluation of sustainability dimensions in the study.

To capture adaptive capacity, Dynamic Capabilities Theory extended RBV by emphasizing an enterprise’s ability to sense opportunities, seize them, and reconfigure resources in response to change (Teece, 2014). This perspective was relevant in understanding how producers responded to market fluctuations, climate risks, and resource scarcity.

Finally, the Sustainable Livelihoods Framework situated enterprise sustainability within a broader livelihood context, examining how human, financial, physical, natural, and social capital interacted with vulnerability and institutional structures (Scoones, 2015). This framework ensured that sustainability was assessed not only at the enterprise level but also in terms of household and community well-being.

Together, these theories provided a holistic lens for analyzing the sustainability, challenges, and strategic needs of the anahaw fan industry.

Conceptual Framework

The conceptual framework of the study illustrated the relationship between the business profile of anahaw fan producers, their level of sustainability, the challenges they encountered, and the strategic recommendations formulated to strengthen the industry. Anchored in a quantitative descriptive research design, the framework followed an input–process–output structure.

The inputs consisted of the producers’ business profile, specifically years as a maker, capitalization, volume of production per month, market reach, and number of workers. These variables described the operational characteristics of the anahaw fan industry and reflected the internal resources available to producers.

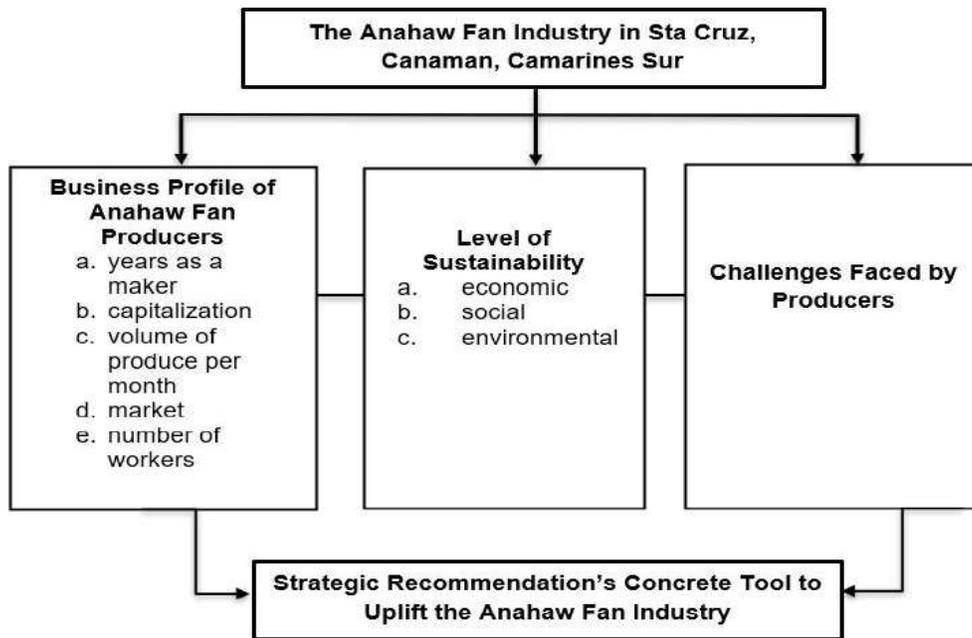


Figure 2. *Conceptual Framework*

The process component involved the assessment of sustainability across economic, social, and environmental dimensions, as well as the identification of challenges affecting production and livelihood continuity. Sustainability indicators measured income adequacy, cultural and social contributions, and environmental practices, while challenges such as financial constraints, raw material availability, labor supply, weather disturbances, and market access were quantified and ranked.

The output of the framework was the formulation of strategic recommendations aimed at enhancing the sustainability and resilience of the anahaw fan industry. These recommendations were derived directly from empirical patterns observed in the data and were designed to address

identified weaknesses while reinforcing existing strengths. By linking business profile characteristics, sustainability outcomes, and challenges, the conceptual framework ensured that proposed strategies were evidence-based, context-specific, and aligned with both livelihood sustainability and cultural preservation.

METHODOLOGY

Research Design

This study employed a quantitative descriptive research design to assess the sustainability of the anahaw fan industry in Barangay Sta. Cruz, Canaman, Camarines Sur. The design was appropriate because the study aimed to describe existing conditions and characteristics of the industry rather than to test hypotheses or establish causal relationships. Specifically, the design allowed for the systematic description of the producers' business profile, the evaluation of sustainability across economic, social, and environmental dimensions, and the identification of challenges affecting production and livelihood continuity.

The quantitative descriptive approach enabled the collection of numerical data that reflected the status of the anahaw fan industry during the research period. Although brief follow-up interactions were conducted to clarify unclear responses, all data were treated quantitatively, and no qualitative coding or inferential analysis was applied. This ensured consistency with the study's descriptive purpose and supported an objective presentation of findings relevant to development-oriented planning and policy formulation.

Respondents of the Study

The respondents of the study consisted of 35 anahaw fan producers from Barangay Sta. Cruz, Canaman, Camarines Sur. Purposive sampling was employed to select producers who were actively engaged in anahaw fan-making at the time of data collection and were recognized by the barangay or local stakeholders. The selection criteria ensured that the respondents possessed direct experience and practical knowledge relevant to the objectives of the study.

The sample size reflected the actual population of active anahaw fan producers in the barangay during the research period. While the findings were context-specific, the selected respondents provided sufficient data to describe the operational characteristics, sustainability conditions, and challenges of the local anahaw fan.

Data Gathering Tools

Data were collected using a researcher-made survey questionnaire composed of three sections. The first section gathered information on the business profile of the respondents, including years as a maker, capitalization, volume of production per month, market reach, and number of workers. These items were structured using predetermined response categories to facilitate uniformity and ease of data tabulation.

The second section measured the level of sustainability of the anahaw fan industry across economic, social, and environmental dimensions using a five-point Likert scale, where 5 indicated Highly Sustainable and 1 indicated Not Sustainable. Each sustainability dimension consisted of five indicators designed to capture income adequacy, social contributions, cultural preservation, and environmental practices.

The third section assessed the challenges encountered by producers in anahaw fan-making, such as weather disturbances, raw material availability, financial constraints, labor supply, government support, market access, and competition. These items were rated using a five-point scale ranging from Highly Challenging (5) to Not Challenging (1).

The questionnaire was reviewed by subject-matter experts to establish content validity. Revisions in wording and structure were incorporated based on their feedback prior to the final administration of the instrument.

Data Gathering Procedure

Prior to data collection, a formal letter of approval was secured from the School of Business and Accountancy of the University of Nueva Caceres and was presented to the Local Government Unit (LGU) of Barangay Sta. Cruz. Upon approval, the researchers personally administered the survey questionnaires to the identified respondents.

The purpose of the study was explained to the participants, and informed consent was obtained to ensure voluntary participation. Questionnaires were either collected immediately after completion or retrieved at an agreed-upon time. Clarifications were sought only when responses were unclear, without altering the quantitative nature of the data. All completed questionnaires were checked for completeness, encoded, and prepared for statistical analysis.

Data Analysis Techniques

The collected data were analyzed using descriptive statistical tools. Frequency and percentage distributions were used to describe the business profile of the respondents. Weighted mean and ranking were applied to assess the level of sustainability across economic, social, and environmental dimensions, as well as to determine the severity of challenges encountered by producers.

The weighted mean values were interpreted using a five-point scale to describe sustainability levels (Highly Sustainable to Not Sustainable) and challenge intensity (Highly Challenging to Not Challenging). Results were organized and presented in tabular form to enhance clarity, accuracy, and ease of interpretation.

Ethical Considerations

Ethical standards were strictly observed throughout the conduct of the study. Respondents were provided with informed consent forms detailing the purpose of the research, procedures, potential

risks and benefits, confidentiality measures, and their right to withdraw at any stage without penalty. To protect privacy, all personal identifiers were removed during analysis and reporting.

The study complied with the ethical guidelines of the University of Nueva Caceres and adhered to the provisions of the Philippine Data Privacy Act of 2012. The use of artificial intelligence tools in the research process was limited to supportive functions such as grammar checking, paraphrasing, and reference organization. AI tools were not used to generate or manipulate data, and all outputs underwent human verification to ensure accuracy, reliability, and academic integrity.

RESULTS AND DISCUSSION

The producers' business profile in terms of years as a maker, capitalization, volume of produce per month, market and number of workers involved in the anahaw fan industry in Sta. Cruz, Canaman, Camarines Sur.

Table 1
Business Profile of Anahaw Fan Production

Profile	F	%	Rank
Number of Years			
11–15 years	1	3%	2
16 years and above	34	97%	1
Total	35	100%	
Source of Capital			
Personal savings	5	14.29%	2
Loan (Bank or Lending Company)	2	5.71%	3
Loan (Personal)	1	2.86%	4
Multiple Source	27	77%	1
Total	35	100%	
Capital			
Below ₱5,000	7	20%	3
₱5,001 – ₱10,000	14	40%	1
₱10,001 – ₱20,000	9	25.71%	2
₱20,001 and above	5	14.29%	4
Total	35	100%	
Volume of Produce per Month			
250–300 fans	7	20%	3
301–600 fans	14	40%	1
601–1200 fans	9	25.71%	2
More than 1200 fans	5	14.29%	4

Total	35	100%	
Market			
Nearby towns/provinces	2	5.71%	2
Multiple Market	33	94.29%	1
Total	35	100%	
Numbers of Workers			
1–5 workers	28	80%	1
6–10 workers	7	20%	2
Total	35	100%	

Legend: F-Frequency, %- Percentage

The results presented in Table 1 described the business profile of anahaw fan producers in Sta. Cruz, Canaman, Camarines Sur. Thirty-four (34) respondents had been engaged in fan production for sixteen (16) years or more, signifying a deeply rooted traditional craft that had been sustained over time. Regarding source of capital, 5.71% of respondents relied on loans from banks or lending companies, 14.29% used personal savings, and 2.86% depended on personal loans, while 77% of the respondents’ capital came from multiple sources. This indicated that while the producers had maintained their operations for decades, most still relied on borrowed funds or personal resources rather than institutional investment or government support.

In terms of capitalization, the majority of producers (40%) operated with an investment ranging from ₱5,001 to ₱10,000, followed by 25.71% with ₱10,001–₱20,000, and 14.29% with ₱20,001 and above, while 20% had capitalization below ₱5,000. These figures suggested that most producers operated within a micro-scale financial capacity, which likely limited their ability to expand production or adopt technological improvements. Regarding production volume, the majority of producers (40%) produced between 301–600 fans monthly, followed by 25.71% who produced 601–1200 fans, with only 14.29% exceeding 1200 fans. This showed that the industry remained small in scale, with limited capacity for larger production volumes that could support wider market reach.

In terms of market reach, almost all respondents (97.14%) supplied to nearby towns and provinces, with 80% selling locally within the barangay or municipality, and only 2.86% engaging in export or online selling. This implied that the anahaw fan producers primarily served local and regional demand, with very limited participation in digital or international markets. Lastly, most producers employed 1–5 workers (80%), while 20% had 6–10 workers, indicating that production was typically family-based or operated with minimal hired labor.

These findings highlighted that anahaw fan industry in Sta. Cruz was a long-standing, micro-scale enterprise primarily focused on local and nearby markets. While the industry was resilient and deeply tied to local traditions, the producers’ low capitalization and limited market diversification hindered opportunities for expansion and modernization. The reliance on small financial resources and minimal outside investment further restricted the ability of producers to enhance their operations and compete on a larger scale.

The business profile of anahaw fan producers in Sta. Cruz, Canaman, Camarines Sur was explained through the Resource-Based View (RBV) and Porter’s Five Forces Model. RBV highlighted that intangible resources—craftsmanship, traditional knowledge, and decades of experience—sustained production despite limited tangible assets such as low capitalization, minimal labor, and modest production volumes, constraining scalability. Porter’s Five Forces contextualized these internal strengths by showing how strong buyer power, readily available substitutes, and limited market reach restricted competitiveness and expansion. Together, these frameworks explained why the industry remained resilient yet stagnant, operating as a culturally rooted micro-enterprise primarily serving local and nearby markets.

Reflecting on these findings, the anahaw fan industry in Sta. Cruz, while stable, remained vulnerable to financial and market pressures. The findings suggested that to strengthen the industry’s competitiveness, producers needed to improve product design, marketing strategies, and access to wider markets, particularly through digital platforms. By embracing online marketing and e-commerce, producers could reach new customers and diversify their sales channels, reducing reliance on local markets. Additionally, support programs focused on financial management, digital literacy, and the establishment of cooperatives could significantly empower producers. Such initiatives would help them adapt to competitive market forces, sustain their craft, and ensure long-term economic sustainability for future generations.

The level of sustainability along economic, social and environmental level in anahaw fan industry in Sta. Cruz, Canaman, Camarines Sur.

Table 2.1

Level of Sustainability along Economic in Anahaw Fan Industry

Statement	WM	Rank	Interpretation
1. The income generated from anahaw fan production is sufficient.	5	1	HS
2. The role of production in supporting the family’s basic needs is significant.	4.97	2.5	HS
3. The stability and regularity of customers are consistent.	4.94	4	HS
4. Access to financial support (such as loans and government	3.74	5	HS

aid) is adequate. 5. The profitability and long-term viability of the business are favorable.	4.97	2.5	HS
Overall	4.72		HS

Legend: 4.50-5.00 Highly Sustainable (HS); 3.50-4.49 Sustainable (S); 2.50-3.49 Moderately Sustainable (MS); 1.50-2.49 Less Sustainable (LS); 1-1.49 Not Sustainable (NS), WM- Weighted Mean

The results of the assessment of the economic sustainability of anahaw fan industry in Table 2.1 revealed that the livelihood was performing at a highly sustainable level, as reflected in the overall weighted mean of 4.72. Among the indicators, income generated from anahaw fan-making ranked first with a perfect weighted mean of 5.00, indicating that the production consistently provided sufficient earnings for the producers. This was followed by the fan-makers’ ability to support their family’s basic needs and the profitability and long-term viability of the business, both of which shared the second rank with a weighted mean of 4.97. These findings demonstrated that the enterprise not only served as an immediate source of livelihood but also showed potential for continued economic resilience.

Another indicator, customer stability, received a slightly lower rating of 4.94. While still considered highly sustainable, this suggested that demand was generally consistent, but not entirely immune to fluctuations, particularly due to external factors such as seasonal changes and market competition. The lowest rating, although still classified as highly sustainable, was access to financial support, which received a weighted mean of 3.74. This indicated that despite the overall economic viability of the enterprise, difficulties remained in securing formal loans, grants, or institutional funding, thereby restricting opportunities for growth.

Taken together, these figures suggested that the anahaw fan industry had operated under conditions of economic strength at the production and income level, yet there were structural constraints that limited its ability to expand, scale, or formalize. The very high ratings in income and household support indicated that the craft continued to function as a reliable financial activity within the community. However, the relatively lower performance in financial access revealed a form of economic ceiling, where producers were able to sustain their operations but not necessarily grow them.

structural weaknesses persisted in financial access and intergenerational recognition. Environmental sustainability was strong in production methods and eco-friendly practices but vulnerable in raw material availability, indicating a fragile natural capital base. The

integrated frameworks revealed that while the industry remained operationally and socially sustainable, long-term viability required enhanced financial support, resource management, and reinforcement of cultural value.

In light of these results, several practical recommendations were proposed. Producers were recommended to be assisted in formally registering their enterprises, organizing into cooperatives, and participating in financial management and digital marketing training programs. Support from the LGU and relevant agencies was also recommended to improve access to capital and market opportunities.

Table 2.2
Level of Sustainability along Social in Anahaw Fan Industry

Statement	WM	Rank	Interpretation
1.The role of anahaw fan-making in strengthening connection to the community is significant.	5	1.5	HS
2.The social and economic benefits gained by the family from anahaw fan industry are substantial.	5	1.5	HS
3.The value and appreciation of anahaw fan-making within the local community are evident.	4.91	5	HS
4.The willingness to transmit anahaw fan-making skills to future generations is strong.	4.94	4	HS
5.The contribution of anahaw fan industry to local cultural preservation is noteworthy.	4.97	3	HS
Overall	4.96		HS

Legend: 4.50-5.00 Highly Sustainable (HS);3.50-4.49 Sustainable (S); 2.50-3.49 Moderately Sustainable (MS); 1.50-2.49 Less Sustainable (LS); 1-1.49 Not Sustainable (NS), WM- Weighted Mean

The results of the assessment of social sustainability in anahaw fan industry in Table 2.2 revealed that the livelihood had been performing at a highly sustainable level, as shown by the overall

weighted mean of 4.96. The highest indicators were shared by two statements, both obtaining a perfect weighted mean of 5.00: the ability of anahaw fan-making to strengthen the producers' connection to the community, and the social and economic benefits that the activity provided to their families. This implied that fan production had not only served as a source of income but had also functioned as a socially embedded livelihood linked to community identity, cooperation, and shared practices. The contribution of anahaw-fan production to cultural preservation ranked third with a weighted mean of 4.97, indicating that the craft had remained widely recognized as a cultural symbol with continuing relevance in local tradition. Meanwhile, willingness to teach future generations received a weighted mean of 4.94, suggesting that while producers were generally committed to knowledge transfer, some reservations might still exist regarding youth interest or livelihood stability. The lowest rating, although still highly sustainable, was the perceived value and appreciation of anahaw-fan-making in the local community with a weighted mean of 4.91, which implied that social recognition remained strong but not absolute, possibly due to modernization or declining visibility of traditional crafts.

Taken together, these results suggested that anahaw fan industry had sustained a strong degree of social embeddedness, fulfilling not only economic roles but also cultural, familial, and community functions. The high scores affirmed that the producers viewed the craft as a meaningful social practice rather than a purely commercial trade, which explained why intergenerational transmission and cultural continuity remained important aspects of production. However, the slightly lower public appreciation rating implied that the craft's visibility and perceived value might be gradually overshadowed by industrial products, imported substitutes, or reduced cultural exposure among younger sectors of society. This indicated that social sustainability was being maintained largely through the commitment of existing producers rather than through widespread societal reinforcement.

The results aligned closely with the foundations of sustainability. Elkington's (1997) Triple Bottom Line framework offered a useful lens, where the "People" pillar underscored the importance of social equity, cultural vitality, and community well-being as essential measures of sustainability. The strong scores across social indicators showed that the anahaw fan industry had remained socially anchored, yet the relative decline in community appreciation suggested a need to reinforce cultural awareness and public recognition to maintain long-term intergenerational transmission.

In light of these insights, several practical recommendations were proposed to strengthen the social sustainability of anahaw fan industry. First, the LGU and local cultural councils may develop heritage education programs, cultural fairs, and school-based craft immersion activities to increase youth involvement and visibility of traditional crafts. Second, producers may be formally recognized through local awards, exhibitions, and cultural mapping documentation to enhance social prestige and motivate craft continuation. Third, skills transfer programs such as apprenticeship training, mother-to-youth craft workshops, and barangay-based cultural livelihood schools should be institutionalized to ensure systematic knowledge sharing. Fourth, collaborations with tourism offices and heritage organizations may help position anahaw fan-making as a signature cultural icon of the municipality, thereby raising both appreciation and

demand. Lastly, policies that protect local cultural industries, such as municipal ordinances or LGU funding for cultural enterprises, may ensure that anahaw fan-making remains not only a household livelihood but a socially valued community asset.

Table 2.3
Level of Sustainability along Environmental in Anahaw Fan Industry

Statement	WM	Rank	Interpretation
1. The availability of anahaw leaves as raw materials for production is sufficient.	2.91	5	MS
2. The use of anahaw leaves in production contributes to minimizing environmental harm.	4.97	2.5	HS
3. Sustainable methods are practiced in the gathering of anahaw leaves.	4.94	4	HS
4. Eco-friendly techniques are utilized in the production of anahaw fans.	5	1	HS
5. Community support for the sustainable use of anahaw resources is evident.	4.97	2.5	HS
Overall	4.56		HS

Legend: 4.50-5.00 Highly Sustainable (HS); 3.50-4.49 Sustainable (S); 2.50-3.49 Moderately Sustainable (MS); 1.50-2.49 Less Sustainable (LS); 1-1.49 Not Sustainable (NS), WM- Weighted Mean

The results of the environmental sustainability assessment of anahaw fan industry in Table 2.3 revealed that the industry had been performing at a generally high level of sustainability, as reflected in the overall weighted mean of 4.56. The highest rating was given to the use of eco-friendly methods in fan production, with a perfect weighted mean of 5.00. This demonstrated that producers relied on natural, biodegradable, and non-toxic processes, which did not generate harmful waste.

Following this, two indicators; the environmental benefit of using anahaw leaves and the community’s support for the sustainable use of resources both scored a high 4.97, indicating that the material itself was inherently renewable and was viewed as an environmentally responsible product by the community. Producers’ own practice of sustainable leaf gathering earned a slightly

lower score of 4.94, which still fell within the “highly sustainable” category. This suggested that most fan makers observed responsible harvesting practices, though some may have done so informally, without formal ecological guidelines.

The lowest rating was given to the availability of raw materials, which received a weighted mean of 2.91, reflecting moderate sustainability and highlighting growing concerns over resource sufficiency. The results indicated that, although anahaw fan production employed environmentally friendly methods, the supply of anahaw leaves had not remained consistently abundant. This scarcity was likely influenced by seasonality, land-use changes, unregulated extraction, and the lack of direct suppliers, suggesting that future production could be at risk without interventions such as sustainable resource management, alternative raw material sourcing, or conservation initiatives.

Taken together, these findings implied that anahaw fan industry had been environmentally sustainable in terms of production processes and material characteristics, yet it was vulnerable in terms of long-term resource availability. The consistently high ratings for sustainable practices, eco-friendliness, and community support showed that the producers were not contributing to ecological degradation and that the craft itself aligned with green production values. However, the low availability of raw materials presented an ecological challenge: while the industry used renewable resources, the cycle of renewal was no longer stable or guaranteed. This imbalance suggested that while current production practices did not harm the environment, future production sustainability might be at risk without intervention to secure the continued availability of anahaw leaves.

The challenges faced by producers were elucidated through RBV, Dynamic Capabilities Theory, Porter’s Five Forces, and SLF. RBV framed insufficient capital, limited labor, and raw material scarcity as critical resource deficiencies, while Dynamic Capabilities Theory highlighted limited adaptive capacity to address climate disruptions, market fluctuations, and production instability. Porter’s Five Forces explained market-related pressures, including competition from substitutes, high input costs, and restricted market access. SLF underscored how these challenges affected multiple livelihood assets, revealing systemic vulnerabilities. Collectively, these frameworks demonstrated that the industry’s resilience depended on addressing resource limitations, strengthening adaptability, improving market positioning, and enhancing institutional support.

Based on these insights, several practical recommendations were proposed. First, the LGU and DENR were recommended to collaborate in establishing community-managed anahaw plantations or reforestation zones to ensure the continuous supply of raw materials. Second, an inventory and mapping of anahaw sources were recommended to regulate harvesting quotas and seasonal extraction schedules, rather than allowing open-access gathering. Third, producers were recommended to be trained in sustainable harvesting techniques, such as selective leaf cutting and rotation harvesting, to prevent damage to younger palms and ensure regeneration. Fourth, barangay-level ordinances or environmental agreements were recommended to be enacted to protect wild anahaw stands from land clearing or commercial logging.

The challenges encountered by anahaw fan producers in Sta. Cruz, Canaman, Camarines Sur that affect their production and livelihood sustainability.

Table 3
Challenges Faced by Producers of Anahaw Fan Industry

Statement	WM	Rank	Interpretation
1. Lack of capital to support production and operations.	4.91	2	HC
2. Bad weather condition such as heavy rain and typhoons.	5.00	1	HC
3. High cost of raw materials such as anahaw leaves, buri, and yarn.	4.48	6	C
4. Shortage of raw materials including anahaw leaves, buri, and yarn.	4.86	3	HC
5. Limited supply of available labor.	4.51	5	HC
6. Limited access to markets for sales and distribution.	3.94	7	C
7. Strong competition from synthetic or mass-produced fans.	3.77	8	C
8. Lack of government support (LGU Canaman and Barangay Counsel of Sta. Cruz)	4.54	4	HC
Overall	4.50		HC

Legend: 4.50-5.00 Highly Challenging (HC); 3.50-4.49 Challenging (C) 2.50-3.49 Moderately Challenging (MC); 1.51-2.49 Less Challenging (LC); 1.00-1.50 Not Challenging (NC), WM-Weighted Mean

The findings in Table 3 revealed that the producers of anahaw fans faced a range of challenges that significantly affected their production and livelihood. The overall weighted mean of 4.50 indicated that the respondents generally perceived these challenges as highly challenging. Among the most pressing concerns, bad weather conditions, such as heavy rains and typhoons, emerged as the leading issue, with a perfect weighted mean of 5.00. This suggested that weather disturbances had severely hindered the collection, drying, and processing of essential raw materials, causing substantial disruptions to the production schedule. The seasonality and unpredictability of weather patterns were thus critical factors that needed to be addressed in order to stabilize production processes and ensure consistent supply.

The findings revealed a scarcity of raw materials for anahaw fan production; however, this was not due to an absolute lack of resources but rather the absence of direct suppliers. Alternative sources, such as “Caragumoy” from Lagunoy, Camarines Sur could be utilized to address this limitation. Financial constraints (WM = 4.91) were also found to significantly affect producers’ capacity to purchase materials, invest in tools or equipment, and sustain continuous operations. The combined effect of limited supplier access and financial challenges hindered production efficiency and restricted the volume of fans available for the market.

Additionally, the lack of government support (WM = 4.54) was noted as a significant barrier. Producers indicated that the assistance from the LGU of Canaman and the Barangay Council of Sta. Cruz had been insufficient, restricting access to vital resources such as training programs, funding, and necessary interventions. Without comprehensive support mechanisms, producers remained isolated and struggled to adopt new technologies or marketing strategies. The limited supply of labor (WM = 4.51) also posed a challenge, as the industry’s reliance on a small, seasonal labor force prevented consistent production and growth. The number of skilled workers

available for fan-making was limited, and the lack of labor flexibility further constrained productivity, especially during peak production periods.

On the other hand, some challenges were rated as simply challenging rather than highly challenging. These included the high cost of raw materials (WM = 4.48), which increased production expenses and reduced profit margins for producers. Additionally, limited access to markets (WM = 3.94) was identified as a significant obstacle, restricting opportunities for broader product distribution and sales. The lack of market diversification limited the potential for growth and exposed the industry to risks related to local demand fluctuations.

Lastly, competition from synthetic or mass-produced fans (WM = 3.77) was also perceived as a threat, as plastic fans and imported alternatives offered lower costs and greater availability, making it harder for traditional anahaw fans to compete in price-sensitive markets.

Overall, the results demonstrated that the challenges faced by producers were multifaceted, combining environmental, financial, logistical, and market-related factors. These intertwined issues highlighted the vulnerability of traditional handicraft production, especially in rural communities that were dependent on natural resources and seasonal labor. The findings underscored the urgent need for stronger governmental support, improved access to capital, sustainable raw material sourcing, and enhanced market strategies to ensure the continued viability and long-term sustainability of the anahaw fan industry.

The proposed strategic recommendations included a concrete implementation tool aimed at uplifting the anahaw fan industry in Sta. Cruz, Canaman, Camarines Sur by translating empirical findings into practice. The Input–Process–Output (IPO) framework operationalized these recommendations by integrating industry characteristics, sustainability conditions, and institutional gaps with targeted processes addressing enterprise formalization, market access, financial capacity, and raw material stability. The framework guided the Strategic Action Plan and its tangible tool, enabling systematic implementation, monitoring, and sustainable local industry development.

Input	Process	Output
<p>Business Profile Findings</p> <ul style="list-style-type: none"> • Long- established producers (16 years and above) • Micro-scale capitalization (₱5,001–₱10,000) • Family-based labor (1–5 workers) 	<p>Enterprise Strengthening and Formalization</p> <ul style="list-style-type: none"> • Organization of producers into a cooperative or association • Business registration and compliance with LGU and DTI requirements • Financial literacy and basic bookkeeping training 	<ul style="list-style-type: none"> • Formalized and organized anahaw fan enterprises • Improved access to financing, programs, and institutional support • Stronger collective bargaining power

<ul style="list-style-type: none"> • Local and nearby market focus 		
<p>Economic Sustainability Strengths</p> <ul style="list-style-type: none"> • High income adequacy and profitability • Significant contribution to household needs • Stable customer base 	<p>Production and Financial Capacity Enhancement</p> <ul style="list-style-type: none"> • Pooled capital and shared production resources through cooperatives • Access to microfinance, grants, and livelihood assistance • Cost management and pricing strategy development 	<ul style="list-style-type: none"> • Increased production efficiency • Improved financial stability and cash flow • Enhanced long-term business viability
<p>Social Sustainability Strengths</p> <ul style="list-style-type: none"> • Strong community ties and cultural value • Intergenerational knowledge transfer • High family and community support 	<p>Cultural Preservation and Skills Development</p> <ul style="list-style-type: none"> • Apprenticeship and skills transfer programs • Cultural fairs, exhibitions, and school-based craft integration • Recognition of producers as cultural bearers 	<ul style="list-style-type: none"> • Sustained transmission of anahaw fan-making skills • Increased youth participation • Strengthened cultural identity and community pride
<p>Environmental Sustainability Findings</p> <ul style="list-style-type: none"> • Eco-friendly production practices 	<p>Sustainable Resource Management</p> <ul style="list-style-type: none"> • Establishment of community-managed anahaw plantations 	<ul style="list-style-type: none"> • Stable and sustainable supply of raw materials • Reduced production disruptions
<ul style="list-style-type: none"> • Renewable raw materials 	<ul style="list-style-type: none"> • Raw material sourcing partnerships (e.g., Caragumoy suppliers) 	<ul style="list-style-type: none"> • Environmentally resilient industry practices
<ul style="list-style-type: none"> • Moderate availability of anahaw leaves 	<ul style="list-style-type: none"> • Training on sustainable harvesting and inventory control 	
<p>Key Challenges Identified</p>	<p>Market Expansion and Resilience Strategies</p>	<ul style="list-style-type: none"> • Expanded market reach beyond local areas
<ul style="list-style-type: none"> • Climate-related disruptions 	<ul style="list-style-type: none"> • Product innovation and quality enhancement 	<ul style="list-style-type: none"> • Stronger competitiveness against synthetic products
<ul style="list-style-type: none"> • Raw material shortages 	<ul style="list-style-type: none"> • Digital marketing and online selling platforms 	<ul style="list-style-type: none"> • Increased demand and sales opportunities
<ul style="list-style-type: none"> • Limited market access 	<ul style="list-style-type: none"> • Participation in trade fairs and tourism markets 	

• Competition from synthetic alternatives		
Institutional Gaps	Institutional and Policy Linkages	• Sustained institutional support
• Limited LGU and agency support	• Collaboration with LGU, DTI, DENR, and cultural agencies	• Policy-backed protection for the anahaw fan industry
• Weak policy protection for traditional crafts	• Advocacy for local ordinances supporting traditional crafts	• Long-term industry resilience
	• Integration into local tourism and development plans	

The results in Table 4 revealed that the anahaw fan industry was predominantly composed of long-established, micro-scale, family-based enterprises with limited capitalization and market reach. Despite these constraints, the industry demonstrated relatively strong economic and social sustainability, particularly in terms of income adequacy, household support, stable customer bases, and strong community and cultural ties. In contrast, the most critical weaknesses were observed in institutional support, market access, and raw material stability, which emerged as key limiting factors to growth and resilience. Overall, the findings indicated that while internal strengths existed, external and structural constraints posed significant challenges to the industry’s long-term competitiveness and sustainability.

These results suggested that the long-established nature of the enterprises enabled producers to sustain operations despite limited financial resources. Production relied heavily on inherited skills, family labor, and local market demand rather than formal business systems. The presence of economic sustainability strengths, such as income adequacy, indicated that existing markets were sufficient for subsistence-level operations but insufficient for expansion. Meanwhile, limited market access and weak institutional support explained why enterprises remained micro-scale despite their longevity. Environmental constraints, particularly moderate raw material supply and climate-related issues, also contributed to production disruptions, as producers depended on natural resources sensitive to seasonal and environmental changes.

The findings aligned with the study’s multi-theoretical framework, which integrated the Resource-Based View (RBV), Porter’s Five Forces, Elkington’s Triple Bottom Line, Dynamic Capabilities Theory, and the Sustainable Livelihoods Framework (SLF). From an RBV perspective, the strong internal capacities of anahaw fan enterprises—such as inherited skills, family labor, and cultural knowledge—represented valuable resources that sustained production despite limited financial capital. Porter’s Five Forces highlighted the constraints posed by weak institutional support and limited market access, which restricted competitiveness and bargaining power, consistent with prior studies on micro-enterprises and craft-based industries (Aidis et al., 2008; Narayan & Pritchett, 1999). The Triple Bottom Line lens emphasized the interconnectedness of economic, social, and environmental factors, reflected in the findings on income adequacy, community cohesion, and raw material dependence, echoing literature on sustainable craft industries (UNDP, 2013; Schaltegger & Burritt, 2018). Dynamic Capabilities

Theory underscored the potential of cooperative formation and capacity-building programs to enhance enterprise adaptability, while SLF highlighted how social capital, institutional support, and resource management shaped livelihood resilience (Scoones, 1998). Together, these theoretical lenses provided a holistic explanation of how internal strengths, external constraints, and sustainability considerations interacted to influence the long-term viability of the anahaw fan industry.

The alignment between sustainability strengths and proposed strategic processes indicated that targeted interventions—such as cooperative formation, financial capacity enhancement, and sustainable resource management—could potentially convert existing strengths into long-term economic and social benefits. The findings confirmed that the industry’s challenges were not due to a lack of capability, but rather to limited systems, support structures, and market integration. These insights supported literature showing that cultural enterprises often possessed strong social capital and skills continuity but remained constrained by informality, limited financing, and weak institutional integration (Aidis et al., 2008; Narayan & Pritchett, 1999). Similar to prior studies on micro-enterprises and indigenous crafts, cooperative organization and formalization were identified as critical pathways for improving market access and bargaining power, while integrating environmental sustainability and institutional gaps highlighted the interconnected nature of economic, social, and environmental factors in traditional industries (UNDP, 2013; Schaltegger & Burritt, 2018).

Based on these findings, enterprise formalization through cooperative or association development was recommended to enhance access to financing, strengthen collective bargaining power, and facilitate institutional support. Local government units and partner agencies were advised to implement targeted capacity-building programs focused on financial literacy, production efficiency, and digital marketing to expand market reach. Sustainable resource management initiatives, such as community-managed plantations and sustainable harvesting training, were suggested to address raw material instability.

The study was limited by its focus on a specific locality and reliance on self-reported data, which could affect the generalizability of the findings. Future research could explore comparative analyses across different regions, assess the long-term impact of cooperative formation, and incorporate quantitative measures of productivity and income changes to further validate the effectiveness of the proposed strategies.

Table 4.2
Proposed Strategic Plan to Uplift the Anahaw Fan Industry

Key Challenges (Findings- Based)	Strategic Interventions / Activities	Timeline	Responsible Persons / Agencies	Expected Results
Low capitalization, informal operations, limited workforce	Business formalization through DTI and LGU registration; orientation on available microfinance and livelihood grants	0–6 months	Producers, LGU, DTI	Increased eligibility for loans, grants, and market participation
Absence of direct raw material suppliers; seasonal scarcity of anahaw	Establish supply linkage with alternative sources (e.g., Caragumoy from Lagunoy); LGU-facilitated coordination	6–12 months	LGU, DENR, Producers	More stable raw material supply and reduced production delays
Financial constraints and weak bargaining power	Formation of producers’ cooperative; financial literacy and cost management training	0–12 months	LGU, DTI, Microfinance Institutions, Producers	Improved access to group lending, shared resources, and financial resilience
Weather-related disruptions affecting drying process	Adoption of mechanical drying technology or establishment of shared drying facility	6–12 months	LGU, DTI, Donors, Producers	Reduced dependence on weather; consistent production output
Limited market reach and low product visibility	Participation in Gainza Trade Fair and other expos; digital marketing and online selling	Annual / 0–6 months (digital)	LGU, DTI, Producers	Expanded market access and improved product visibility
Competition from synthetic and electronic alternatives	Product innovation, eco-branding, and skills upgrading	6–12 months	DTI, DOST, TESDA, LGU, Producers	Enhanced competitiveness and cultural value of products

Table 4.2 presented a findings-based strategic plan that responded directly to the major challenges confronting the anahaw fan industry, particularly low capitalization, informal business operations, raw material constraints, climate-related production risks, limited market reach, and rising

competition from synthetic and electronic substitutes. The proposed interventions were organized within a short- to medium-term timeline (0–12 months) and involved coordinated participation among producers, local government units (LGUs), and relevant national agencies. Overall, the table highlighted a holistic approach that integrated enterprise development, production resilience, and market competitiveness.

The plan emphasized business formalization, access to financing, and cooperative formation as priority interventions. These actions were expected to increase producers' eligibility for loans, grants, and institutional programs while strengthening collective bargaining power. Supply-side challenges were addressed through the establishment of raw material linkages and LGU-facilitated coordination, while production disruptions caused by weather variability were mitigated through the adoption of shared or mechanical drying facilities.

Analytically, the sequencing of interventions suggested that strengthening institutional and financial capacity was a prerequisite for sustained industry development. Formalization and financial literacy enabled producers to engage more effectively with support institutions, while cooperative formation facilitated resource pooling, cost sharing, and risk reduction. Technological interventions further enhanced production consistency, reducing vulnerability to seasonal and climatic constraints that commonly affected small-scale rural enterprises.

The interventions directly translated the study's findings into actionable steps, operationalizing earlier objectives on enterprise strengthening, production resilience, and market access. Interventions such as business formalization, cooperative formation, financial literacy, market expansion, and technological adoption aligned with prior studies showing that enterprise experience, capitalization, labor structure, and market access determined resilience and productivity in handicraft MSMEs (Francisco et al., 2025; Sison & Reyes, 2022; Vitug & Alvarez, 2024; Parreñas & Dela Cruz, 2023). These actions enhanced economic, social, and environmental sustainability, competitiveness, and cultural preservation.



Figure 3. Strategic Recommendation Brochure

It was recommended that the strategic plan be implemented through a coordinated LGU-led rollout, beginning with early monitoring of formalization and cooperative formation to ensure active participation and compliance. This was followed by targeted investments in shared production facilities, including mechanical or communal drying systems, alongside continuous skills upgrading and product innovation initiatives. Such a phased approach strengthened producers' financial resilience, enhanced production consistency, expanded market reach, and supported the long-term competitiveness and sustainability of the anahaw fan industry.

To operationalize the findings and recommendations of Objective 4, a strategic recommendation brochure was developed for the anahaw fan industry in Sta. Cruz, Canaman, Camarines Sur. The brochure served as a concrete and user-friendly tool that translated the strategic plan (Table 4.2) into actionable steps for producers, local government units (LGUs), and supporting agencies. It was organized into five main sections: (1) Business Formalization and Financial Access, (2) Raw Material Management, (3) Production Resilience and Technology, (4) Market Access and Product Visibility, and (5) Monitoring and Continuous Improvement. Each section presented objectives, recommended actions, expected results, and visual aids such as flowcharts, calendars, and icons to facilitate practical adoption.

By presenting the strategic interventions in a simplified and visually accessible format, the brochure bridged the gap between research recommendations and implementation. It enabled producers to follow stepwise actions, track progress, and access resources, ensuring the adoption of business formalization, cooperative formation, technology integration, and market expansion strategies outlined in the strategic plan. As a concrete tool, the brochure also functioned as a knowledge dissemination and capacity-building resource, enhancing awareness among stakeholders and supporting the sustainability, competitiveness, and cultural preservation of the anahaw fan industry. Figure 3 presented the strategic recommendation brochure developed for this purpose.

LIMITATIONS OF THE STUDY

The findings of this study were interpreted with careful consideration of several limitations that may have influenced the results. First, the use of purposive sampling involving only 35 anahaw fan producers from Barangay Sta. Cruz restricted the generalizability of the conclusions, as the experiences and sustainability conditions in this single community may differ from those in other areas with varying market conditions, resource availability, or local government support. Moreover, the cross-sectional nature of the data collection captured only a single point in time, making the responses vulnerable to seasonal fluctuations, particularly those related to raw material supply and weather patterns that affected the drying processes. The reliance on self-reported data also introduced the possibility of recall inaccuracies, social desirability responses, and item misinterpretation, which may result in inflated assessments of economic or social sustainability.

In addition, the researcher-made survey questionnaire, while effective for quantifying key indicators, offers limited capacity to capture deeper qualitative insights or complex nuances,

especially regarding income dynamics and ecological patterns. Several contextual factors such as informal financial arrangements, recent policy shifts, or short-term market disturbances were not fully controlled and may have shaped respondents' perceptions and experiences. Although follow-up interviews were conducted to clarify unclear answers, the study remains subject to potential researcher interpretation and instrument constraints.

Given these limitations, alternative explanations must also be acknowledged; for instance, high social-sustainability ratings may reflect cultural solidarity more than future livelihood stability, and perceived income adequacy may be supported by additional household earnings rather than fan-making alone. These considerations suggested that the conclusions of this study should be viewed as context-specific and exploratory. Future studies would benefit from a larger and more diverse sample, longitudinal measurements across seasons, and a more robust qualitative component to validate and deepen insights into the sustainability of anahaw fan industry.

CONCLUSIONS

Based on the findings of the study of the anahaw fan industry in Sta. Cruz, Canaman, Camarines Sur, the following conclusions were drawn:

1. The anahaw fan industry remained a culturally rooted but micro-scale livelihood that was sustained primarily by tradition rather than entrepreneurial expansion. While producers possessed decades of craftsmanship, the industry's continuity was largely anchored in inherited skills, cultural practices, and stable local demand. However, the limited capitalization, minimal workforce, and small production outputs suggested that the industry had not yet evolved into a formal, sectoral business model. As such, the growth of the industry remained constrained by a lack of entrepreneurial expansion, financial resources, and modern business strategies. The reliance on traditional methods and local consumption limited its ability to scale or modernize.
2. The economic sustainability of the industry was robust at the household level but remained constrained by limited access to financial capital and institutional support. Producers typically earned sufficient income and maintained profitability, but the absence of formal financial assistance, access to modern technologies, and opportunities for business expansion hindered further economic advancement. This situation revealed the pressing need for mechanisms that supported financial inclusion, innovation, and enterprise development, which would empower producers to grow their businesses beyond their immediate financial and resource constraints.
3. Social sustainability emerged as the strongest dimension, driven by cultural preservation, community cohesion, and the intergenerational transfer of skills. Anahaw fan-making continued to serve as a vital source of identity and familial welfare, with producers willing to pass on their craft to younger generations. Despite these strengths, emerging pressures from modernization and the availability of alternative products suggest a potential future decline in community appreciation for traditional crafts, underscoring the need for proactive cultural promotion initiatives.

4. The study concluded that the anahaw fan industry in Sta. Cruz, Canaman, Camarines Sur, faces several interrelated challenges that affect both production and sustainability. There is a scarcity of raw materials, not due to an absolute lack, but primarily because of the absence of direct suppliers; alternative sources, such as “Caragumoy” from Lagunoy, Camarines Sur could help address this limitation. Financial constraints further hinder producers’ ability to purchase materials, invest in tools, and maintain continuous operations, reducing efficiency and limiting market supply. Although producers employ eco-friendly methods, the declining availability of anahaw leaves—exacerbated by seasonality, land-use changes, and unregulated harvesting—poses a risk to long-term ecological sustainability. These findings highlight the need for improved supply chain access, financial support mechanisms, and sustainable resource management initiatives, including replanting and conservation programs, to ensure the continued viability of the industry.
5. The study also identified multiple interrelated challenges, such as weather-related disruptions, raw material shortages, capital constraints, insufficient government support, and restricted market access, which significantly weakened the industry’s overall resilience. These challenges impeded the economic, social, and environmental sustainability of anahaw fan industry, underscoring the need for holistic, multisectoral, and community-based interventions to address these issues effectively.
6. The long-term viability of the anahaw fan industry depended on the implementation of integrated strategies that enhanced financial access, strengthened organizational structures, expanded market opportunities, promoted cultural heritage, and ensured sustainable resource management. By aligning government support, community initiatives, and ecological stewardship, the industry could transition from a vulnerable traditional livelihood into a resilient, competitive, and culturally significant craft sector that would continue to thrive for generations to come.

RECOMMENDATIONS

Based on the findings and conclusions of the study on the sustainability of anahaw fan industry in Sta. Cruz, Canaman, Camarines Sur, the following recommendations were proposed. innov

1. To address the gaps identified in the business profile of the anahaw fan industry in Sta. Cruz, Canaman, Camarines Sur particularly the low capitalization and limited number of workers, it was recommended that producers formalized their business operations through registration with the Department of Trade and Industry (DTI) and the Local Government Unit (LGU). Formal registration was crucial as it enhanced producers’ eligibility for microfinance loans, livelihood grants, and employment assistance programs, which directly responded to constraints in capital and labor. Moreover, legal business recognition opened opportunities for market expansion by allowing producers to participate in broader distribution channels, including online platforms and larger trade fairs. To facilitate this process, a brochure or pamphlet was developed to guide producers through the step-by-step DTI registration process, explain the benefits of formal business recognition, and provide information demystify the registration process and encouraged

- compliance by clearly outlining its advantages. The implementation of this recommendation was undertaken within a six-month period, with the local producers as primary actors, assisted by the LGU and DTI as key responsible institutions.
2. To address the lack of a direct supplier of raw materials, it was recommended that producers established a supply linkage with areas producing alternative materials such as Caragumoy in Lagunoy, Camarines Sur. The Local Government Unit (LGU) was expected to facilitate inter-municipal coordination to ensure a steady and legal supply of raw materials. To further support this initiative, a pamphlet on alternative raw materials and supplier contacts was distributed to producers to reduce production disruptions. The responsible persons for this initiative included the LGU, the Department of Environment and Natural Resources (DENR), and the producers. The proposed timeline for implementation ranged from six to twelve months.

Enhancing the financial access and economic sustainability of the anahaw fan producers was identified as a primary objective. One key intervention was the creation of a cooperative that enabled producers to pool resources, share equipment, and access financial assistance through group lending mechanisms. The formation of a cooperative enhanced the producers' bargaining power, reduced the cost of raw materials through collective purchasing, and improved the overall financial viability of their operations. In addition, financial literacy programs were offered to equip producers with the skills needed to manage finances effectively, track production costs, and reinvest profits into business growth. A pamphlet discussing the benefits of cooperatives and financial management was distributed to producers, outlining the practical steps for cooperative formation and financial literacy. The timeline for this initiative was one year, with the LGU, DTI, microfinance institutions, and the producers serving as the responsible parties, particularly in organizing the cooperative and participating in the training programs.

3. To mitigate climate-related disruptions, it was recommended that producers adopted mechanical drying technology or established a shared drying facility to reduce dependence on favorable weather conditions. In response to the identified competition from synthetic and mass-produced fan substitutes, which was rated as a significant challenge by producers, it was recommended that product innovation initiatives be pursued, including improvements in design, durability, and eco-brand positioning to enhance the competitiveness of anahaw fans in price-sensitive and modern markets. Collaboration with the Department of Trade and Industry (DTI) through the One Town One Product (OTOP) Program, the Department of Science and Technology (DOST) under the Small Enterprise Technology Upgrading Program (SETUP), and the Technical Education and Skills Development Authority (TESDA) was recommended to support innovation, technology adoption, and skills upgrading. To support these efforts, a brochure highlighting climate-resilient technologies and available innovation support programs was developed. The responsible persons included the LGU, DTI, DOST, TESDA, and the producers, with an implementation timeline of six to twelve months.

In addition, one of the critical challenges identified in the study was the limited market access of the anahaw fan industry. To address this concern, producers were encouraged to participate in the

Gainza Trade Fair and other local trade events where they could showcase their products, attract new customers, expand market reach, and establish connections with potential business partners. Furthermore, the promotion of products through digital platforms such as online marketplaces and social media was emphasized to increase visibility and overcome local market limitations and competition from synthetic alternatives. A pamphlet outlining the procedures for trade fair participation and the use of digital platforms for marketing was created to guide producers. This strategy was intended to be implemented annually, with the LGU providing assistance in trade fair participation and digital marketing training, while the producers actively engaged in market expansion efforts.

4. To address the sustainability challenges faced by the anahaw fan producers, particularly those related to weather disruptions, it was recommended that producers adopted climate-resilient production techniques by investing in mechanical drying methods or by establishing a shared drying facility. Weather-related issues such as heavy rains and typhoons had previously disrupted the drying process, resulting in production delays and inconsistencies. The adoption of mechanical drying technology or the establishment of a shared facility reduced dependence on weather conditions and enabled producers to maintain a steady production flow throughout the year. This intervention helped stabilize operations and ensured the ability of producers to meet market demand even during adverse weather conditions. The timeline for establishing the facility was set at six to twelve months, with the LGU, DTI, and potential donors or investors identified as the responsible parties for supporting equipment acquisition, while the producers collaborated in managing and utilizing the facility. To guide this transition, a brochure highlighting the benefits of these technological interventions and outlining the steps for implementation was developed.

In support of this recommendation, a strategic action plan for anahaw fan producers was formulated to address key challenges affecting the industry. Limited market reach was addressed through participation in the Gainza Trade Fair and other local expos on an annual basis, with the LGU and producers as responsible actors. Low product visibility was addressed through digital marketing training and online selling initiatives implemented within six months, led by the LGU and DTI. Weather-related production delays were mitigated through the establishment of a shared mechanical drying facility within six to twelve months, with support from the LGU, DTI, and donors. Competition from electronic devices was addressed through continuous product innovation and eco-branding initiatives supported by the DTI, DOST, and producers. After the completion of this strategic action plan, a comprehensive brochure summarizing market strategies, trade fair participation procedures, and digital marketing guidelines was produced and distributed to all producers to ensure consistent understanding and effective implementation of the planned interventions.

Summary of Recommendations

This study recommended a set of integrated interventions to strengthen the sustainability of the anahaw fan industry in Sta. Cruz, Canaman, Camarines Sur, addressing gaps in business profile,

resource access, production resilience, and market competitiveness. For Objective 1 (Business Profile), the formalization of enterprises through DTI and LGU registration was recommended to improve access to financial assistance, labor support, and wider market opportunities, supported by an informational brochure explaining registration procedures and benefits. For Objective 2 (Resource and Financial Sustainability), the establishment of supply linkages for alternative raw materials and the formation of a producers' cooperative, complemented by financial literacy training, were recommended to address raw material shortages, low capitalization, and limited workforce capacity, with corresponding pamphlets detailing supplier information, cooperative formation, and financial management. For Objective 3 (Production and Innovation Challenges), the adoption of climate-resilient technologies, product innovation, and skills upgrading supported through collaboration with DTI, DOST, and TESDA were recommended to mitigate weather-related disruptions and competition from synthetic and electronic alternatives, accompanied by a brochure highlighting available technologies and innovation support programs. For Objective 4 (Strategic Plan and Market Access), participation in trade fairs, digital marketing initiatives, eco-branding, and the establishment of a shared mechanical drying facility were recommended to expand market reach, improve product visibility, and stabilize production, supported by a strategic guide or pamphlet outlining market strategies and implementation steps.

To ensure coherence and accessibility of all proposed interventions, it was recommended that the researcher consolidate all brochures and pamphlets into a single comprehensive brochure of recommendations covering Objectives 1 to 4. This booklet will serve as a practical reference material for producers, summarizing the step-by-step actions, responsible agencies, timelines, and benefits of each recommendation, thereby facilitating informed decision-making and coordinated implementation among producers and concerned institutions.

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