

**An Analysis of the Aquaculture Stewardship Council (ASC) Scheme
Implementation in Small-scale Shrimp Farming: A Study of Toan Thang
Cooperative, Soc Trang Province, Vietnam**

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Abstract

International certification schemes in aquaculture, such as the Aquaculture Stewardship Council (ASC), have emerged over the past decade. This study was conducted at Toan Thang Cooperative (TTC), Vietnam, to clarify its operation and performance in the ASC scheme. In 2017, TTC obtained VietGAP as a premise for the ASC in 2018. The entire certified process cost US\$69,839. Additionally, the auditing process was supported by multiple levels of organisations and private seafood enterprises, whereas the cost for auditing, maintaining, and training was paid by supporters. As a result, farmers with ASC-certified shrimp products can get premium prices and further financial benefits. Because the ASC has improved financial efficiency for farmers, it should be replicated in small-scale shrimp farming.

Keywords: cost-benefit analysis; ASC scheme; cooperative; whiteleg shrimp; performance; Soc Trang province.

Introduction

Brackish water shrimp farming is an important industry in the country in terms of both volume and value. It provides financial returns and livelihood for thousands of people in the Mekong Delta (MD). In 2020, the shrimp industry stretched over 784,840 ha, providing 950,000 metric tons (mt). Additionally, Vietnamese farm-

raised shrimp products were consumed by over 90 countries worldwide, with the revenue of shrimp export of US\$3.87 billion (VASEP, 2021).

The MD is the most crucial commercial shrimp farming area, representing more than 93% of the dedicated shrimp culture area and 85% of the country's total production (Quyen et al., 2020a). Furthermore, the black tiger shrimp *Penaeus monodon* (Boone, 1931) is an indigenous species and has a long farming history that dates back to the early 1990s with different models. In contrast, the white leg shrimp *Litopenaeus vannamei* (Boone, 1931) is an exotic species and is usually cultured in an intensive or super-intensive system. Also, the white leg shrimp is the main exporting product to highly sophisticated world markets with high consciousness of quality and safety thanks to their short farming cycle and high readiness of domestic production (UNEP, 2016). However, with the spontaneous expansion of intensive white leg shrimp farming causing increasingly unfavourable shrimp farming conditions without quality control, international customers seem to be concerned about their shrimp consumption due to uncertain food safety, quality, and equity products. In other words, markets are looking for an endorsement declaring compliance with standards and sets of certification schemes specific to aquaculture, which have developed and emerged over the last decade (Mohan, 2013). After some failures to control food safety and quality in the 1990s, several aquaculture certification schemes, such as the ASC, GlobalGAP, and BAP, were developed to transform the global seafood markets and promote safe product consumption. The focus of these aquaculture certifications is on the assurance of food hygiene and safety, particularly disease prevention, environmental safety, social safety, and traceability (Lap et al., 2012; UNEP, 2016). Nabeshima et al. (2015) and UNEP (2016) have revealed that most certified products were processed by more extensive and advanced companies. In the context of small producers in the MD in Vietnam, smaller farms, cooperatives, and households face challenges applying such standards. Indeed, this is due to the lack of administration, access to information, and technical and financial capacity to meet international standards (Nabeshima, 2015; UNEP, 2016). Therefore, numerous kinds of certifications for aquacultural certifications have been introduced in Vietnam since 1996, with regular support from such non-governmental organisations (NGOs), such as the Worldwide Fund for Nature in Vietnam (WWF-VN), the International Collaborating Centre for Aquaculture and Fisheries Sustainability (ICAFIS) as well as donors. These certification schemes were strongly promoted among collective organisations like cooperatives (*Hợp tác xã*) or farming clusters (*Tổ hợp tác*). This means that a group of farmers whose names are in the member list of a cooperative will possess a common standard certification. The certification is issued by an authorised certifier and granted after all members of the cooperatives or clusters have undergone an auditing process. A cooperative is a collective economic organisation whose founders have mutual needs and share the same benefits, consisting of seven or more individuals, households, and legal entities. The founders have mutual needs, share the same benefits, and voluntarily contribute capital and labour to carry out

specific work, enhancing productivity and efficiency and improving their livelihood. A cluster is defined as an economic organisation based on a cooperation contract authenticated by a communal People's Committee. It is formed by three or more individuals who contribute capital and labour to conduct specific work for shared benefits and responsibilities. Clusters also represent a lower level of organisation and management than cooperatives (FAO, 2012; Ha et al., 2013).

However, the expansion of the ASC to small-scale farmers is limited compared to the current potential of production capacity. Therefore, this study aims to answer the following questions: 1) What is the process for obtaining the ASC certificate for small-scale shrimp farming? 2) What benefits does the ASC scheme give the shrimp farmers? 3) What should be considered to replicate the ASC scheme to small-scale shrimp farming in the MD?

Additionally, the corresponding objectives are threefold, namely 1) to describe and clarify the operation of the cooperatives and the ASC certifications auditing process, 2) to evaluate outcomes and difficulties that the ASC scheme brings to farmers, and 3) to delve into aspects of popularising the ASC certification in the shrimp industry.

Materials and Methods

Theoretical review on the ASC scheme

The ASC is an international independent non-profit organisation that manages the world's leading certifications and labelling programs on responsible aquaculture. It was founded in 2010 by Sustainable Trade Initiative-IDH with the support from WWF Netherlands. Facilitated by WWF-US, Aquaculture Dialogues were kickstarted in 2004 as a precursor for the ASC.

To be certified by the ASC, shrimp farms are required to comply with seven principles in feeding, i.e., 1) legal aspects, 2) farm sites, 3) societies and communities, 4) responsible farm operation, 5) shrimp health management, 6) broodstock and postlarvae, and 7) resources and environment, besides other 104 criteria. The ASC farm certification is issued by an independent conformity assessment body (CAB). For the benefit of small producers, the ASC's new Group Certification methodology, utilised in early 2019, allows small farmers to get together as a group to apply for the ASC certificate collectively. The chain of custody (CoC) certification is required in each step in the supply chain for any product carrying the ASC logo to ensure its traceability. When the CoC is certified, the products can carry the ASC logo.

Vietnam, which ranks third among the distribution countries of ASC-approved labelled products, just after Norway and Chile, has been increasingly aware of the prestige of the ASC. Its certified products include pangasius and shrimps. By 2020, around 233 large shrimp farms/companies and cooperatives have acquired the ASC certification, mainly in the MD (ASC-aqua.org, 2021). In 2015, the first ASC-

certified standard was obtained by shrimp farmer groups in Bac Lieu province for extensive shrimp system improvement. After that, Hòa Nghĩa Cooperative and Soc Trang Seafood Joint Stock Company (STAPIMEX) in Soc Trang province jointly obtained the ASC certification in 2016 for their intensive system. More recently, Toàn Thắng Cooperative (TTC), in collaboration with Ut Xi Aquatic Products Processing Corporation, also successfully obtained the ASC certificate in 2018.

Methodology

The above objectives were accomplished by conducting a comprehensive case study involving TTC, the latest intensive shrimp cooperative certified by the ASC in the MD. In April 2021, an in-depth interview with the cooperative's director was conducted in Kinh Moi hamlet, Vinh Hiep commune, Vinh Chau district, Soc Trang province, Vietnam (Figure 1).

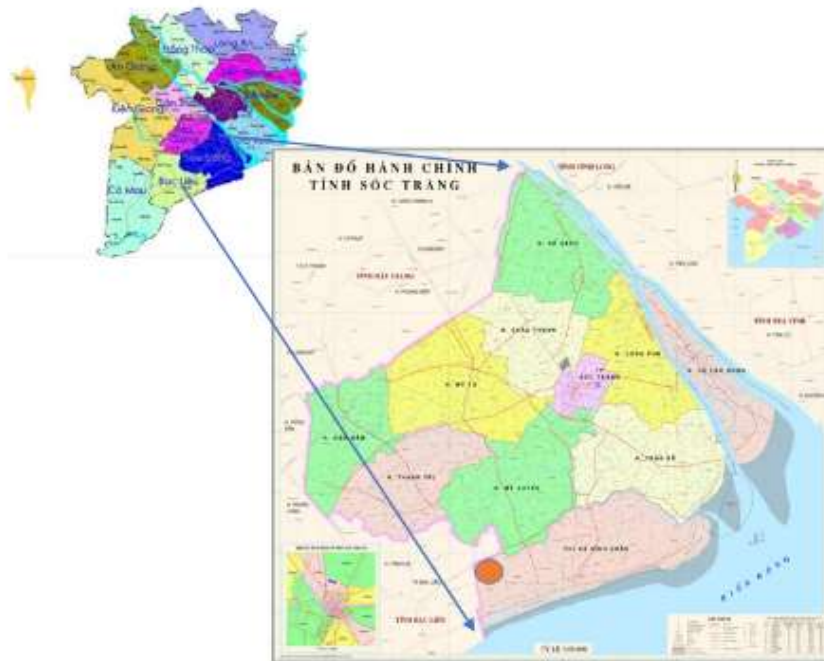


Fig. 1. Location of Toàn Thắng Cooperative in the Mekong Delta.

Source: Vietnam Institute of Economics & Planning, 2015 and author's survey, 2021

In terms of facilitation and reference, the author counselled the staff with WWF-VN, an NGO supporting the cooperative's whole ASC certification obtaining process. Moreover, a short talk was arranged between the author and ICAFIS about the future orientation of ASC certification. WWF-VN and ICAFIS are key supporters responsible for further developing and expanding the ASC scheme to

smallholders and shrimp cooperatives in the MD by implementing aquaculture certifications in Vietnam. Moreover, 40 farmer-members of the TTC (n = 40) were interviewed face-to-face in April 2021 to analyse the financial efficiency of intensive white leg shrimp farming under the ASC scheme.

Differences in the cost-benefit analysis of the ASC-certified TTC shrimp farming were explored using descriptive statistics, i.e., mean, standard deviation, frequency, and percentage. There were also comparisons among cost items, which comprised investment, fixed, and variable costs, and their structures. Moreover, financial benefit indicators were calculated and compared using Statistical Package for the Social Sciences (SPSS) 18.0 software.

Result and Discussion

Outline of Toan Thang Cooperative

The precursor of TTC was a farming cluster established on 18 October 2010. It initially included only 24 members across a feeding area of 30.50 ha. About six years later, on 18 November 2016, the farming cluster was upgraded to be a cooperative with five more members. The total shrimp farming area at that time was 41.59 ha. Currently, TTC includes 52 members, 261 people, and 176 labourers practising monoculture of brackish shrimp over an area of 76.61 ha with an authorised capital of 168.5 million Vietnam dong (VND).

The operation of the cooperative abides by the 2003 Law of Cooperative, amended and supplemented in 2012. Moreover, it is administered by the cooperative management board (CMB) elected by its members. The CMB comprises five members, namely a director, a vice-director, a surveyor, an accountant, and a secretary. Among them, the payments for the surveyor, accountant, and secretary are from the governmental budget. Farmers who wish to be part of the cooperative must submit an application form to the CMB and prepare a multi-pay charter capital of up to 10 million VND. The CMB organises monthly meetings, quarterly meetings, and bi-annual meetings. In addition, the cooperative congress is held annually at the headquarter of the commune with distinguished delegates from the authorities and supporting organisations. The cooperative, however, does not own any private headquarters. Therefore, all administrative activities have to take the director's house as the venue.

Pursuing the process of ASC certification in Toan Thang Cooperative

In 2016, with support from the local authorities, the cooperative first applied for the VietGAP certification under the Project of Coastal Resources and Sustainable Development (CRSD, which the World Bank funded). It got the certificate in October 2017. By 2017, WWF-VN had been looking for potential cooperatives to replicate the ASC scheme after the success of Hòa Nghĩa Cooperative in 2016 under the DANIDA-sponsored Project of Promoting Better Practices and Certification for

Small-scale Shrimp Farming in Vietnam. TTC was the first choice, thanks to its previous effective efforts to meet the VietGAP standards and its typical collaborative economy operation.

VietGAP platform allows shrimp farms with the national certification to transition to the ASC scheme based on a handbook named “ASC-VietGAP Benchmark Guidance Document: Shrimps” by the ASC, WWF, and Ministry of Agriculture and Rural Development (MARD) (MARD, WWF-VN, and ASC.org, 2018). The handbook identified overlapping areas between the two standards and outlined necessary information on meeting the requirements, thereby streamlining the ASC scheme (Table 1). In general, there are many overlapping aspects between the ASC and the VietGAP. The difficult tasks for WWF are the environmental impact assessment (EIA) and social impact assessment (SIA). Regarding production, farmers can now focus on the differences in principle 5: shrimp health management, which features stricter water monitoring requirements, use of chemical compounds, and traceability by records.

Tab. 1. Key Additional Requirements in the ASC-VietGAP Benchmark by Principle

ASC Principles	Additional Requirements	Guidance
1. Legal aspect	Legal transparency	Provide evidence
2. Farm sites	EIA ¹	Contact WWF-VN ² Avoid using groundwater as it is not allowed.
3. Societies and communities	SIA ³ Labour use	Contact WWF-VN
4. Responsible farm operation	Employer and labour regime	
5. Shrimp health management	In-charge water; survival rate; No antibiotics Water treatment	Use strainers with appropriate sizes Consult the list of antibiotics and disinfectants
6. Broodstock, Post Larvae	Draining management	Employ the draining management system Avoid using the GMO ⁴ seeds
7. Resources and environment	Traceability of input materials	Contact WWF-VN Record the material usage

¹ EIA: Environmental Impact Assessment; ² WWF-VN: World Wide Fund for Nature in Vietnam; ³

Social Impact Assessment; ⁴ GMO: Genetically Modified Organism

Tab. 2. *Timeline of the ASC auditing process at Toan Thang cooperative*

Period	Events	Supporters	Projects
2016	Training on VietGAP certification; Launching the ASC scheme		CRSD ¹ project
2017	Toan Thang Cooperative awarded VietGAP standard		
End of 2017	Training courses to upgrade from VietGAP to ASC for members of the cooperative		
	Contacting seafood processing enterprise	Local authorities;	Promoting Better
16/3/2018	Signing a farming contract with Ut Xi to culture shrimp according to the ASC scheme	DARD ² ; WWF-VN ³ ;	Practices & Certification for
01 – 02/2018	1. Conducting SIA ⁵ and EIA ⁶ for farms belonging to Cooperative 2. Preparing evaluation procedure 3. Contact conformity assessment body: Control Union 4. Submitting all procedures/documents to Certifier	ICAFIS ⁴	Small-scale Shrimp Farming in Vietnam Project
Mid 2018	1. Certifier makes on-site pre-audit: approximately 75% complied with requirements 2. Farmers improve unfulfilled requirements (3 months) 3. Final assessment		
26/12/2018	Control Union awarded ASC to the cooperative		
2019 - 2020	Annual re-assessment		

¹ CRSD: *Project of Coastal Resources and Sustainable Development*; ² DARD: *Department of Agricultural and Rural Development (at the provincial level)*; ³ WWF-VN: *World Wide Fund for Nature in Vietnam*; ⁴ ICAFIS: *International Collaborating Centre for aquaculture & fisheries sustainability*; ⁵ SIA: *Social Impact Assessment*; ⁶ EIA: *Environmental Impact Assessment*.

As presented in Figure 2, the local authorities, WWF-VN and ICAFIS, have conducted multiple training courses to upgrade from VietGAP to the ASC. WWF-VN contacted local processing companies and recommended Út Xi (or Ut Xi) to get involved in the process and be responsible for TTC's supply and export of ASC shrimp products. On 16 March 2018, TTC and Ut Xi signed a farming contract with specific obligations to ensure that the produced shrimps complied with the ASC standards and established a buyer-supplier relationship. In early 2018, the ASC audits were kickstarted with the first preparation for the SIA and EIA conducted by WWF-VN in collaboration with ICAFIS. The assessing procedure included a set of documents that had been meticulously prepared by all stakeholders and was submitted to the Control Union – an independent certifier contacted by WWF and Ut Xi. The certifier was in charge of accrediting and monitoring applicants as a third party and was recognised as the highest level of independent assessment. The CAB would decide whether certification is compliant or not yet compliant, together with the level of non-compliance (with a time-bound improvement plan). Following the submission of the contract to the Control Union, the on-site pre-audit took place at the TTC in June 2018. After getting the announced report and indicator categories that needed to be modified (25%), the final assessment took place in November 2018, and ASC certification was officially awarded on 26 December 2018. A cooperative can be certified within half a year from the application date. The certifier also makes the annual audits, and the process will be repeated every three years, which means the subsequent re-assessment will be at the end of 2021.

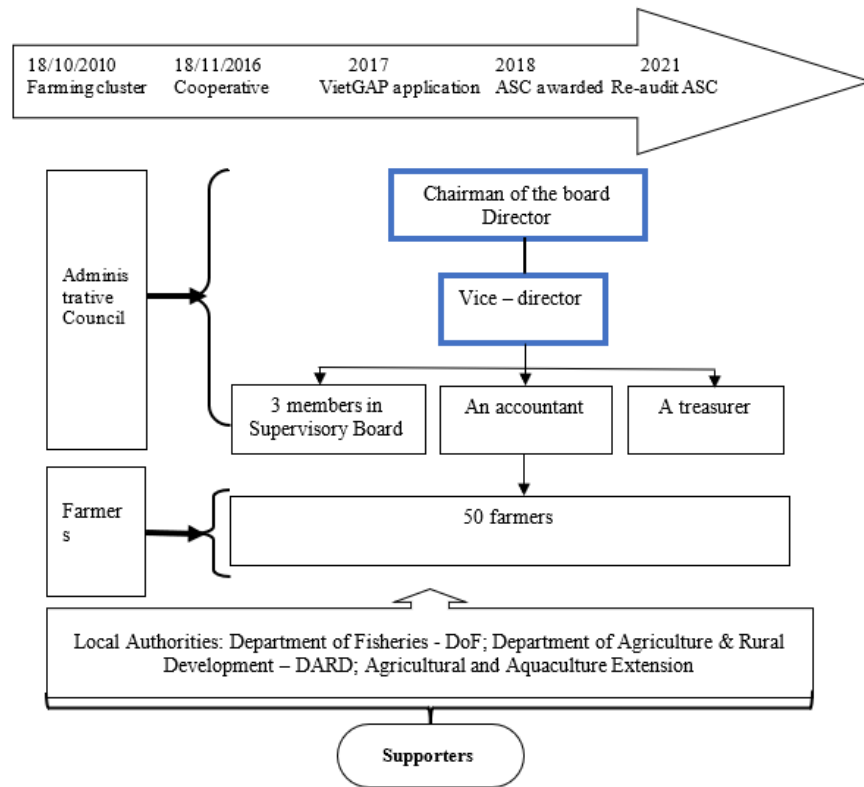


Fig. 2. Cooperative history timeline and organisational chart of Toan Thang Cooperative.

Source: Author's Survey, 2021

Economic Analysis for the ASC Certification Process at Toan Thang Cooperative

Cost for the ASC-certified process accrued by multiple stakeholders

As shown in Table 1, the participation of all partners highlighted the relationship between a strong shrimp farmer cooperative and private processing and export enterprises. Four direct stakeholders were involved in this process: the farmer cooperative, the seafood buyer and processing enterprise (Ut Xi), the supporters (WWF-VN and ICAFIS), and the local government. In addition, the independent auditor (Control Union) was also involved in the process but acted as a third party (indirect stakeholder). The cost breakdown of the ASC shrimp certification of TTC is shown in Figures 3 and 4 and Tables 3 and 4.

The primary assessment for the ASC certificate was valued at US\$69,839.4 for the running process of three years, which was equivalent to US\$0.1995/kg or 4,389 VND/kg, in which the costs to comply with the ASC requirements constituted 85.7% and certifying cost represented 8,45% of the total costs (US\$5,983.2). The amount spent on fulfilling principles 6 and 7 was the highest, at approximately 32% each (Figure 3).

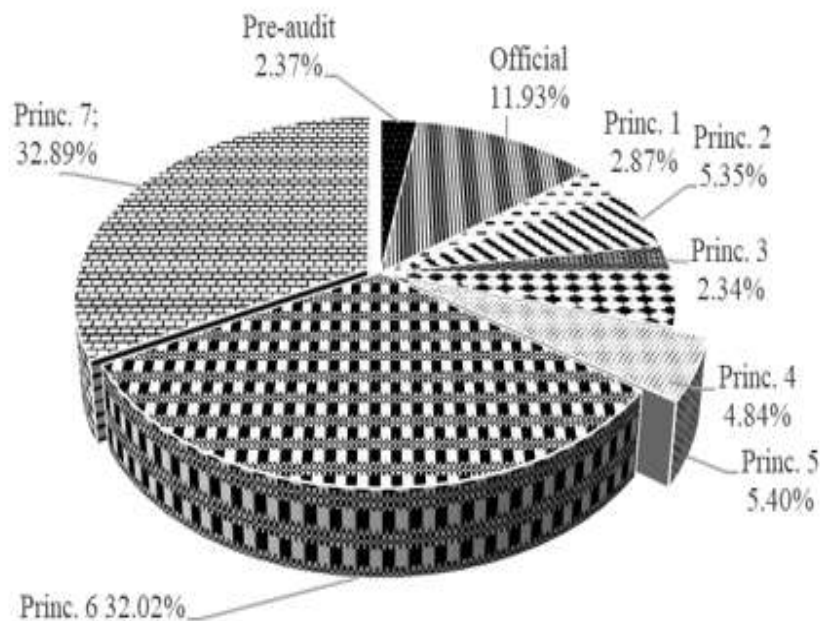


Fig. 3. Breakdown of costs according to audited ASC shrimp standard principles at Toan Thang Cooperative.

Princ. is an abbreviation of principle (of the ASC certification)

Concerning the cost shared by stakeholders, 49.5% of the total expenditure paid by TTC mainly consisted of price premium for compliance with the ASC principles. The seafood buyer and processing enterprise contributed 39%, most responsible for the certified audit. WWF-VN supported more than 10.5% of the cost while the local government paid 1% (Figure 4).

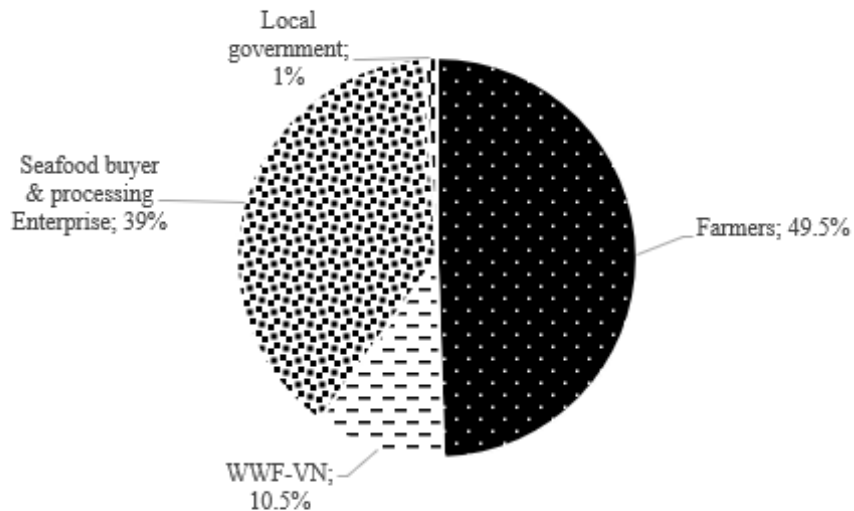


Fig. 4. Cost coverage by stakeholders in the process of auditing ASC shrimp standard at Toan Thang Cooperative.

WWF-VN: World Wide Fund for Nature in Vietnam – A non-government organisation facilitating the ASC scheme application in Vietnam

The cost-share to obtain the ASC certification at TTC could be divided into two phases, namely the preparation phase and the ASC principle compliance phase. In both phases, the detailed cost-share could be split into six components. These are staffing cost (human resources); payment to the third party; travel and accommodation; workshop, training, discretionary and contingent cost; and field running costs (Table 3 and 4). During the preparation phase, the most significant part of the cost was used to cover the training for farmers of TTC and auditing activities. Meanwhile, most compliance phase costs went to field running of the principles.

Tab. 3. Detailed cost-sharing by stakeholders in the preparation phase for the ASC certification at Toan Thang Cooperative (USD)

No.	Item	Total	Seafood buyer & Processing enterprise	WWF- VN	Shrimp farmer cooperatives	Local government
I	Total	27,437.13	20,192.68	5,898.23	1,096.92	249.30
1	Gap analysis for farmer groups on ASC requirements	380.60	0	380.60	0	0
1.1	Staffing cost	194.04	0	194.04	0	0
1.2	Third-party fees	152.28	0	152.28	0	0
1.3	Travel, accommodation	34.28	0	34.28	0	0
2	Development of a work plan for farmer groups based on gap analysis	1,329.19	0	1,329.19	0	0
2.1	Staffing cost	677.89	0	677.89	0	0
2.2	Third-party fees	531.63	0	531.63	0	0
2.3	Travel, accommodation	119.66	0	119.66	0	0
3	Awareness building for farmers on buyer requirements and link	803.99	271.53	532.46	0	0
3.1	Staffing cost	410.10	138.57	271.53	0	0
3.2	Travel, accommodation	75.00	27.01	47.99	0	0
3.3	Workshop, training, discretionary and contingent cost	318.90	105.95	212.94	0	0
4	Training on farmer organizations by applying Internal Management system (IMS)	5,110.65	5,110.65	0	0	0
4.1	Staffing cost	2,606.43	2,606.43	0	0	0
4.2	Third-party fees	1,533.20	1,533.20	0	0	0
4.3	Travel, accommodation	511.07	511.06	0	0	0
4.4	Workshop, training, discretionary and contingent cost	459.96	459.96	0	0	0
5	Pre-audit for cooperative	1,170.05	1,170.05	0	0	0
5.1	Staff cost	596.66	596.66	0	0	0
5.2	Third-party fees	456.22	456.22	0	0	0

5.3	Travel, accommodation	117.17	117.17	0	0	0
6	Cost of audit/certification and executive costs for certification	8,850.15	8,850.15	0	0	0
6.1	Staffing cost	1,812.16	1,812.16	0	0	0
6.2	Third-party fees	5,983.2	5,983.2	0	0	0
6.3	Workshop, training, discretionary and contingent cost	1,054.79	1,054.79	0	0	0
Executive costs associated with maintaining certification or responsible						
7	production	1,196.64	1,196.64	0	0	0
7.1	Staffing cost	1,196.64	1,196.64	0	0	0
Concerning the legal documents; training farmers; contacting local						
8	organizations	1,346.22	0	0	1,096.92	249.3
8.1	Workshop, training, discretionary and contingent cost	1,346.22	0	0	1,096.92	249.3
Supporting/monitoring farmers when they apply ASC system at shrimp						
9	farms	2,546.6	2,546.6	0	0	0
9.1	Staffing cost	1,298.85	1,298.85	0	0	0
9.2	Travel, accommodation	993.46	993.46	0	0	0
9.3	Workshop, training, discretionary and contingent cost	254.29	254.28	0	0	0
10	Office-running costs (share cost with other projects in 36 months)	1,047.06	1,047.06	0	0	0
11	Capital asset cost	174.51	0	174.51	0	0
12	Management fee (12.5%)	3,481.48	0	3,481.48	0	0

WWF-VN: World Wide Fund for Nature in Vietnam; currency ratio at 1 USD = 23,000 Vietnam Dong (2021).

The processing enterprise often contributes to ASC estimation costs that are relevant to auditing, IMS establishment and testing of shrimp feed, seed as ASC group requirements; The farmers will invest the parts such as feed, post-leaves as ASC required, and then the processors/buyers will buy the products at a premium price; WWF staff cost should be included in the new project

Tab. 4. Cost distribution per principle for the ASC certification

No.	Item	Total	Seafood buyer & Processing plant	WWF- VN	Shrimp farmer cooperatives	Local government
	Total	42,402.27	7,047.71	1,453.92	33,485.15	415.50
	Principle 1: comply with all applicable national and local laws and regulations					
1	Principle 1: comply with all applicable national and local laws and regulations	1,419.35	0	1,003.85	0	415.50
1.1	<i>Staffing cost</i>	<i>511.90</i>	<i>0</i>	<i>511.90</i>	<i>0</i>	<i>0</i>
1.2	<i>Third-party fees</i>	<i>100.55</i>	<i>0</i>	<i>100.55</i>	<i>0</i>	<i>0</i>
1.3	<i>Workshop, training, discretionary and contingent cost</i>	<i>806.90</i>	<i>0</i>	<i>391.40</i>	<i>0</i>	<i>415.50</i>
	Principle 2: Site farms in environmentally suitable locations while conserving biodiversity and important natural ecosystems					
2	Principle 2: Site farms in environmentally suitable locations while conserving biodiversity and important natural ecosystems	2,649.23	2,420.70	0	228.53	0
2.1	<i>Staffing cost</i>	<i>1,525.30</i>	<i>1,525.30</i>	<i>0</i>	<i>0</i>	<i>0</i>
2.2	<i>Third-party fees</i>	<i>580.87</i>	<i>580.87</i>	<i>0</i>	<i>0</i>	<i>0</i>
2.3	<i>Travel, accommodation</i>	<i>117.59</i>	<i>117.59</i>	<i>0</i>	<i>0</i>	<i>0</i>
2.4	<i>Workshop, training, discretionary and contingent cost</i>	<i>196.95</i>	<i>196.95</i>	<i>0</i>	<i>0</i>	<i>0</i>
2.5	<i>Field running costs</i>	<i>228.53</i>	<i>0</i>	<i>0</i>	<i>228.53</i>	<i>0</i>
	Principle 3: Develop and operate farms with consideration for surrounding communities					
3	Principle 3: Develop and operate farms with consideration for surrounding communities	1,158.41	1,158.41	0	0	0
3.1	<i>Staffing cost</i>	<i>590.84</i>	<i>590.84</i>	<i>0</i>	<i>0</i>	<i>0</i>
3.2	<i>Third-party fees</i>	<i>451.65</i>	<i>451.65</i>	<i>0</i>	<i>0</i>	<i>0</i>
3.3	<i>Travel, accommodation</i>	<i>115.92</i>	<i>115.92</i>	<i>0</i>	<i>0</i>	<i>0</i>
	Principle 4: Operate farms with responsible practices					
4	Principle 4: Operate farms with responsible practices	2,395.36	1,298.44	0	1,096.92	0
4.1	<i>Staffing cost</i>	<i>745.41</i>	<i>745.41</i>	<i>0</i>	<i>0</i>	<i>0</i>
4.2	<i>Third-party fees</i>	<i>228.53</i>	<i>228.53</i>	<i>0</i>	<i>0</i>	<i>0</i>
4.3	<i>Travel, accommodation</i>	<i>130.05</i>	<i>130.05</i>	<i>0</i>	<i>0</i>	<i>0</i>

4.4	Workshop, training, discretionary and contingent cost	194.45	194.45	0	0	0
4.5	Field running costs	1,096.92	0	0	1,096.92	0
Principle 5: Manage shrimp health and welfare in a responsible manner						
5		2,669.17	1,671.97	0	997.20	0
5.1	Staffing cost	1,101.91	1,101.91	0	0	0
5.2	Third-party fees	290.85	290.85	0	0	0
5.3	Travel, accommodation	126.73	126.73	0	0	0
5.4	Workshop, training, discretionary and contingent cost	152.49	152.49	0	0	0
5.5	Field running costs	997.20	0	0	997.20	0
Principle 6: Manage broodstock origin, stock selection, and effects of stock management						
6		15,840.11	498.18	0	15,341.92	0
6.1	Staffing cost	214.19	214.19	0	0	0
6.2	Third-party fees	283.99	283.99	0	0	0
6.3	Field running costs	15,341.92	0	0	15,341.92	0
Principle 7: Use resources in an environmentally efficient and responsible manner						
7		16,270.65	0	450.07	15,820.58	0
7.1	Third-party fees	269.91	0	269.91	0	0
7.2	Travel, accommodation	180.16	0	180.16	0	0
7.3	Field running costs	15,820.58	0	0	15,820.58	0

WWF-VN: World Wide Fund for Nature in Vietnam; currency ratio at 1 USD = 23,000 Vietnam Dong (2021).

The processing enterprise often contributes to ASC estimation costs that are relevant to auditing, IMS establishment and testing of shrimp feed, seed as ASC group requirements; The farmers will invest the parts such as feed, post-leaves as ASC required, and then the processors/buyers will buy the products at a premium price; WWF staff cost should be included in the new project

The seafood buyer and processing enterprise covered 7.16% of the total cost, and the local government contributed 0.19% of the cost by providing human resources. The majority of the cost was from farmers' contributions. However, in this unique case, the processing company paid extra costs for auditing and maintaining the ASC certification and bought the ASC shrimp products at premium prices. Therefore, the ASC certification will not reduce the net income of shrimp farmers unless the sales price and demand for ASC shrimp do not increase.

Production performance and interests at Toàn Thắng Cooperative under the ASC

Scheme

Currently, after being awarded the ASC certification, TTC operates on an area of 76.6 ha, 63 ha of which is shrimp farming areas. Multi-species fish and mud crab farming take up 3 and 3.6 ha, respectively. In 2020, the cooperative harvested 10 ha of black tiger shrimps with the production of 6.5 mt. Meanwhile, the average productivity was 1 mt/ha, the revenue reached one billion VND, and the net profit was recorded at 512 billion VND. The white leg shrimp farming boasted 53 ha of intensive shrimp farming, providing 122 mt of ASC-certified shrimp products, garnering 5.5 billion VND.

In the farming contract signed on 18 March 2018 with Ut Xi processing enterprise, an article on price premium states: "ASC-certified shrimp products are bought at a premium price of 2,500 VND, equivalent to US\$0,114, compared to the shrimp price on the market". However, the seafood processing company was able to further assist with annual funding of 100 million VND (US\$4,554) to maintain the ASC certification. This support is vital for the cooperative in the future when WWF-VN directs support to other cooperatives.

Cost-benefit analysis of Toan Thang Cooperative's participation in the ASC scheme

The certification cost was US\$69,839 for the three-year project. However, the WWF-VN staffing cost should be excluded from the new project, which means the budget needed was only US\$53,354, of which farmers shared 49.5% (or US\$26,410), equivalent to 1,660 VND/kg or US\$0.075/kg (US\$26,410/350 mt for three years' production). Regarding the production cost for farmers, the ASC-certified shrimp farms in the sample invested a total of US\$14,209/ha/cycle as a start-up, equivalent to US\$2.33/kg. The process of upgrading shrimp farms according to the ASC scheme might increase by 3.2% of the total production cost, which was still much lower compared to the cost increase in the previous study (UNEP; 2016; Quyen et al., 2020b). This additional cost to upgrade to the ASC from VietGAP was insignificant; a more significant amount of money, a 20% to 25% production cost increase, was required to adopt VietGAP (Marschke and

Wilkins, 2014; Quyen et al., 2020a). These different amounts were needed to improve the farm's capacity towards ASC requirements for materials and infrastructure, such as ASC-certified feed and post larvae, digging deeper ponds, building separate reservoirs, and developing irrigation and waste treatment systems (Figure 5).

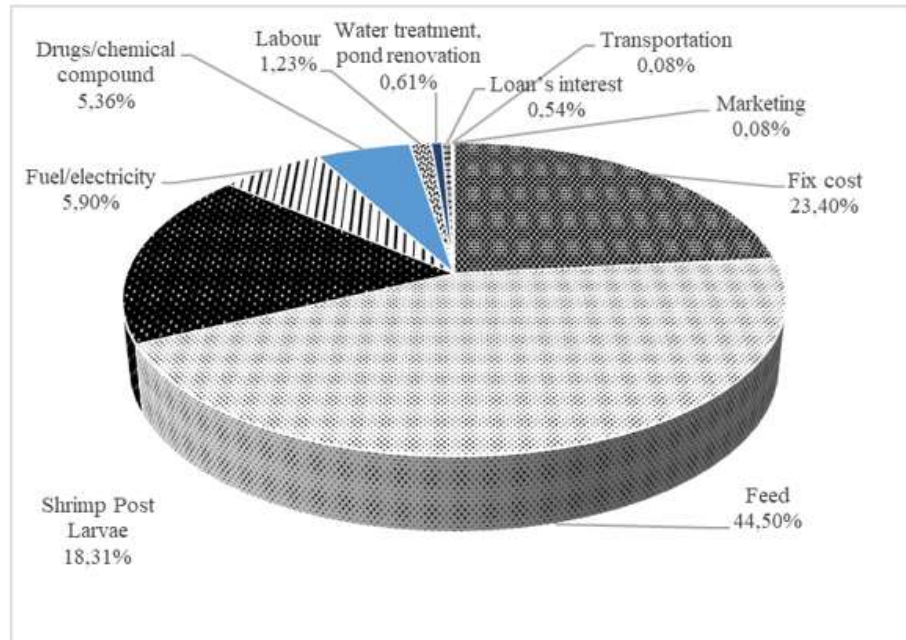


Fig. 5. Production cost breakdown of ASC-certified shrimp farms of *Toan Thang* Cooperative.

The agreed price premium in the farming contract was 2,500 VND/kg, together with a financial aid of 80 million VND per annum, which equaled approximately 656 VND/kg (80 Million VND/122 mt). In other words, farmers sold their products at 3,156 VND/kg (US\$0.144), higher than the amount they had to pay (1,496 VND/kg or US\$0.069/kg). To conclude, ASC certification for shrimp farming at TTC was a profitable case thanks to sponsored auditing costs and annual funding to maintain certification from the processing company and WWF-VN. On the other hand, Quyen et al. (2020b) indicated that the ASC certification at Hoa Nghia Cooperative brought minimal incentive for farmers at US\$0.03/kg. However, there was a double improvement in financial incentives for farmers with the ASC certification in TTC's case.

More importantly, the processing company was responsible for auditing costs to the third party. This was a considerable incentive for shrimp farmers when they were unwilling to pay more than the production cost, even for international certifications.

Discussion

International certification schemes such as the ASC certification in aquaculture are believed to drive global seafood consumption in the foreseeable future. VietGAP now serves as a springboard for farmers to achieve international certifications, such as the ASC, thanks to similarities in their marking criteria (Nabeshima et al., 2015; Quyen et al., 2020), providing the certified with a particular advantage. Therefore, the ASC aims to make these incentives more prominent and regulate the price premium in official legislation documents (Dong et al., 2021). Nevertheless, the first factor driving contract farming is participation in the cooperative (Behera, 2019). That means the ASC scheme first works with a small group of farmers like cooperatives with potential capacity. Therefore, the process to acquire ASC is relatively complicated but seamless.

It is also notable that TTC did not actively pursue ASC certification initially, as the WWF-VN noticed. The TTC smallholders were aware of the strict requirements for international standards, the low accompanying price premium, and their lack of production capacity, capital, and auditing knowledge. Therefore, they only agreed to participate with the support from NGOs and the government, especially for certification costs and documents related to auditing (Nabeshima et al., 2015; Quyen et al., 2020b). A study by Quyen et al. (2020b) indicated that it is difficult to scale up the ASC scheme to other cooperatives in the MD without external support and financial sponsorship from multiple stakeholders because the incentive from ASC is low. In the case of TTC, the successful obtainment of the ASC certification was attributed to external facilitation and sponsorship. Yet, the incentive improved with the significant increase in price premium regulated in the farming contracts.

Conclusion and Recommendation

This study shed light on the current situation of ASC scheme application for shrimp farming in the MD, Vietnam. TTC is the latest intensive shrimp cooperative to be awarded the ASC certification in the MD, learning from the first case of the Hoa Nghia cooperative in the same region. Within three years, the ASC scheme in TTC underwent two phases, specifically preparation and compliance with the principles. The auditing process took approximately four months from the moment of application and cost approximately US\$69,839.4 (equivalent to US\$0.1995/kg or 4,389 VND/kg). The majority of the costs paid were for ASC principle compliance and were incurred by farmers in the interest of rebuilding their farms. Further, the seafood buyer and processing enterprise covered the pre-auditing and auditing costs. When comparing the cost and benefits, it is clear that the farmers received an official price premium and annual support that motivates them. Therefore, it can be concluded as a successful and improved case of the ASC scheme application for shrimp farming in Vietnam.

However, auditing success depends on support from different stakeholders and supporters. More specifically, the WWF-VN and seafood buyer and processing enterprise were very efficient in networking and financial support. Therefore, to popularise ASC certification to other small-scale shrimp farms in the MD, shrimp farming must be restructured according to collective economic conditions. The experience with VietGAP certification can also facilitate the transition to ASC certification. Nevertheless, the benefits must be attractive enough to farmers to encourage them to voluntarily participate in the scheme proactively.

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