

Enhancing Stakeholders' Role in the Value Chain for Sustainable Fisheries Development: A Case of Anchovy Fisheries in Vietnam

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In the case of Vietnam, globalization has created not only favorable conditions for the development of the country's commercial fisheries but also brought about challenges in addressing the requirements of the fish consuming public, e.g. food hygiene and safety, traceability and environment-friendly production. In order to secure a niche in the world's fish market, the sustainability of the country's fisheries industry should be ensured, which could be achieved by focusing on strengthening its value chain for fish and fishery products. This article attempts to study the features of the value chain of anchovy products and offers policy recommendations for the sustainable development of anchovy fisheries in Khanh Hoa Province, Vietnam.

In Vietnam, anchovy fisheries is one of main livelihoods for thousands of coastal fishers and is also a source of vital income for stakeholders involved in the process of production and distribution of anchovy products. However, the sustainability of the country's anchovy fisheries is challenged by various concerns that include the decreasing and depleting fishery resources, the seemingly unequal benefits gained by various stakeholders along the supply and market chains, the need to comply with requirements for traceability by importing countries, among others. Therefore, the need to assess the value chain of the anchovy products has become necessary in order to examine the benefits that stakeholders could obtain from the fishery while also ensuring the sustainability of anchovy fisheries and fulfilling the food safety requirements of importing countries. The Structure-Conduct-Performance (SCP) approach was used to identify and analyze the linkage among stakeholders involved in the production and distribution of anchovy products. Considering that the fishers is always at the losing end and getting the least benefits in the value chain, the role of the anchovy fishers along the value chain should be enhanced for the sustainable development of anchovy fisheries in Vietnam.

As defined in many references (**Box 1**), value chain could be summarized as a sequential set of processes that aim to transform inputs into value-added outputs that cater to the requirements of the market. The aspect of value-adding involves the entire supply chain activities from determining the preference of customers to products development until production and distribution of the end products. Specifically in fisheries, supply chain is a set of processes to generate fish

and fishery products, i.e. culture, harvesting, transforming or manufacturing, and delivery of the products to target market, i.e. marketing and distribution.

Box 1. Compiled definitions of value chain vis-à-vis supply chain

The entire set of processes and activities required to put up a product then deliver it to a target market is considered as supply chain, where "putting up a product" encompasses growing, transforming or manufacturing. For fisheries, the entire chain goes from oceans or farms to tables. Smooth functioning of value chain requires not only the factors of production and technology but also efficient transport, marketing information systems and management. While value chains are concerned with what the market will pay for goods or services offered for sale, supply chains focused on the costs and how long it takes to present the goods for sale. While supply chain management aims to reduce the number of links and reduce friction such as bottlenecks, costs incurred, time to market, value chain management strives to maximize gross revenue and sustain it over time. Good supply chain is therefore essential to develop a value chain. In a value chain, products pass through all activities of the chain in order, where the product gains some value at each activity. It is a physical representation of the various processes involved in producing goods (and services), starting with raw materials and ending with the delivered product passing through the supply chain. It is based on the notion of value-adding at every activity to obtain the total value of the value-added yields.

Anchovy Fisheries in Vietnam

Anchovies are among the most important pelagic fishes of the Southeast Asian region. Of the 13 species of anchovies under the genus *Stolephorus* found in the region, *S. heterolobus* and *S. indicus* are the most common (SEAFDEC, 2012). Although the fishery statistical report of Vietnam does not show the country's actual production of anchovies as the information is combined with those for marine fishes *nei*, it is a common fact that the country's anchovy resources are exploited by anchovy purse seines that operate in the waters of the central and southern provinces of the country. With the catch from the purse seines in the central and southern areas of the country accounting for about 8% and 12% of the country's total catch from marine fisheries, respectively (SEAFDEC, 2002), this implies the importance of anchovy fisheries to the economic development of the country. Moreover, Vietnam is also famous for its fish sauce, which is derived from fermented anchovies. In 2011, the fish sauce production of Vietnam was about 250,900 tons worth about VND 6,664.6 billion (Euromonitor International, 2011). While the market of the

Table 1. Anchovy fishing vessels sampled in Khanh Hoa Province (by engine power groups)

Engine power group	Cam Ranh			Nha Trang		
	Population	Sample	Sampling rate (%)	Population	Sample	Sampling rate (%)
20-44 HP	147	14	9.5	60	12	20.0
45-90 HP	71	7	9.9	48	13	27.1
Total	218	21	9.6	108	25	23.1

Table 2. General information on anchovy fishing vessels in Khanh Hoa Province

Criteria	Mean	Max	Min	SD
General information				
Hull length (m)	13.9	16.7	11.6	1.4
Engine power (HP)	45.7	80.0	20.0	16.4
Fishing trips per month (trips/month)	22.3	25.0	21.0	1.2
Fishing months per year (months/year)	10.0	10.0	10.0	0.0
Crew size (person)	9.6	12.0	8.0	1.3
Experience of skippers (years)	12.5	18.0	7.0	3.2
Average harvest (kg/trip)	464.6	680.0	300.0	96.4
Expenditure (Million VND)				
Average fixed costs in one year	84.0	118.0	60.5	17.2
Average variable costs in one year	176.7	364.1	122.1	39.9

famous Vietnamese fish sauce is expected to continue to grow steadily in the coming years, this makes anchovy fisheries becoming much more economically significant for Vietnam.

The Case Study

In order to ensure the sustainability of the anchovy fisheries in Vietnam, notwithstanding the status of its anchovy resources, a case study was conducted in Khanh Hoa Province to assess the role of fishers in the value chain for anchovy products and develop policy recommendations for the sustainability of anchovy fisheries. Specifically, the case study was aimed at analyzing the structure of value chain of anchovy products and the role of stakeholders involved in the production, assessing the distribution of benefits among the stakeholders in the value chain, and providing recommendations for improving the anchovy product's competitiveness in the world market, and eventually promoting the sustainable development of the country's anchovy fisheries.

For the case study, interviews were conducted with stakeholders involved in anchovy fisheries such as the fishers, middlemen, fish sauce companies, fish processing companies, traders, retailers, and consumers in Khanh Hoa Province, more particularly in Nha Trang and Cam Ranh. Stratified sampling survey was carried out in 2010 to collect data for 2009 involving 46 fishing households, 2 fish sauce companies, 1 fish processing company producing anchovy products for export, 2 primary middlemen, 1 secondary middleman, and 2 fish processing companies producing anchovy products for

domestic market. In the survey, two groups of samples were taken from Cam Ranh (Binh Ba- Binh Hung Island and Ba Ngoi communes) and another two from Nha Trang (Vinh Truong and Vinh Nguyen communes). A summary of the information on the anchovy fisheries in the study area is shown in **Table 1** while **Table 2** presents additional information on anchovy fishing vessels in Khanh Hoa Province.

At the start, mapping was used to identify the stakeholders involved in the distribution of anchovy products, as well as the input and output costs incurred by each stakeholder in the value chain. Then, the relationships among the three basic elements in the value chain, *i.e.* market structure, market conduct, and market performance were determined using the SCP approach (Krishnan and Narayanakumar, 2010; Trondsen, 2003). However, due to limited data, only some key elements had been included in the analysis as shown in **Fig. 1**.

Market Structure

Stakeholders involved in the value chain of anchovy products

Results of the study revealed that two levels of middlemen are involved in the distribution of anchovy products, the primary and secondary middlemen. The common characteristics of the value chain for anchovy products in Khanh Hoa Province, Vietnam shown in **Fig. 2** indicate that primary middlemen serve as link between the fishers and the secondary middlemen. While the buying segment of primary middlemen

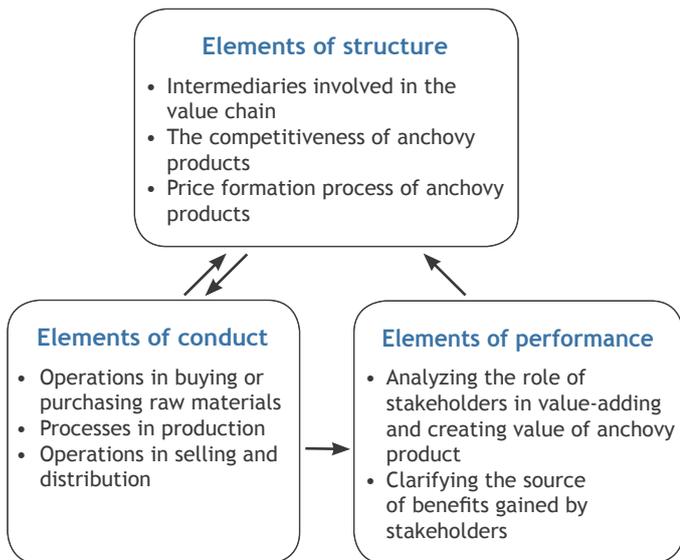


Fig. 1: Application of SCP approach to assess the three market elements of anchovy products

is at sea, that of secondary middlemen is on land. Middlemen are oftentimes local citizens who have adequate knowledge with regards to good quality fish and the seasons for high catch. Usually, middlemen belong to affluent families, especially the secondary middlemen who have the power to dictate the prices of fish because they are normally the source of loans availed by fishers for their operating as well as other family expenditures.

While in Nha Trang, there were three secondary middlemen buying anchovy products for export and approximately 10 primary middlemen working with anchovy fishers, the situation in Cam Ranh was different as there were 25 primary middlemen mostly coming from nearby islands. Results of the survey further revealed that some of the secondary middlemen also operate small-scale companies engaged in drying or

freezing anchovy products meant for export to Korea or Japan. Middlemen continue to exist for many years because of the persistent symbiotic relationship between middlemen and fishers. Since middlemen had always been an easy source of loan for fishers thus, fishers are obliged to sell their catch to the middlemen.

Due to their inadequate facilities, fishers are unable to preserve large quantities of fish during fishing trips or transport their catch on land as often as necessary because of the high cost of fuel. This is another aspect where middlemen's role comes in handy by helping fishers in preserving and transporting their catch. Moreover, fishers who are inadequately educated are oftentimes not capable of transacting business with big companies because of the seemingly complicated documentation and other administrative works.



A primary middleman from Khanh Hoa Province, Vietnam contented after the fishers' windfall of good anchovy catch

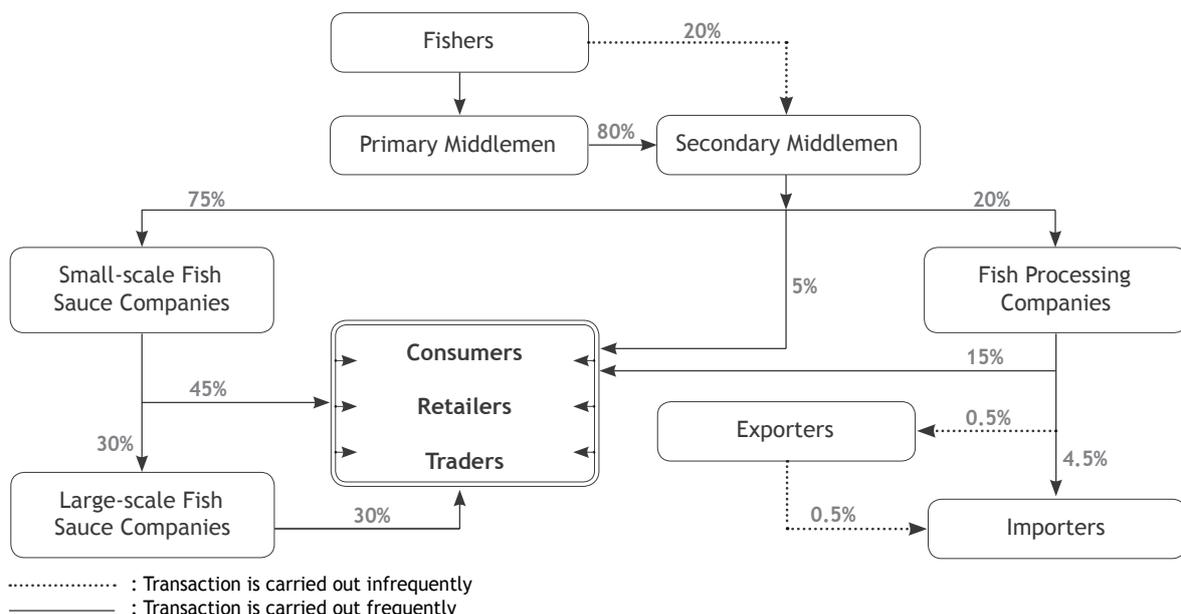


Fig. 2: Value chain of anchovy products in Khanh Hoa Province, Vietnam

Fish processing companies including those engaged in freezing, drying and steaming fish products for export and for sale in domestic markets require large quantities of anchovies to be used as raw materials for processing. Anchovies are collected from various sources such as from middlemen, fishing vessel owners and traders, making the value of the anchovy products increase by several folds during the various stages of product transformation. In Khanh Hoa Province, fish sauce companies are mostly owned by private companies and produce fish sauce mainly for the domestic market as it is the country's traditional ingredient for local cuisine, while only few countries are using fish sauce in their culinary.

Nevertheless, the survey also unraveled that 584 joint stock companies had been marketing small quantities of fish sauce abroad while many fish product exporters also use fish sauce as ingredients for their value-added products. For instance, it was also discovered that large-scale fish sauce companies in Vietnam which include a big corporation producing popular brands of fish sauce, usually buy fish sauce from small companies to be transformed using their own technology into enhanced fish sauce products and sold in markets.

Although their involvement in the value chain of anchovy products is considered minimal, export traders still exist because some private processing companies are sometimes unable to export their products. The exporters' role in the chain is therefore mainly in facilitating transactions especially in terms of transporting and distributing anchovy products to importers. However, exporters are not involved in the production or in the transformation of the products. Importers that comprise the last stakeholders in the value chain for anchovy products are mainly from Korea and Japan.

Competitiveness among anchovy stakeholders in the value chain

Fishers: A number of anchovy fishing vessels are operating in Khanh Hoa Province, Vietnam although it was reported that the number of anchovy fishing vessels had decreased since 2005. While this is a good sign for the sustainable exploitation of the anchovy resources but it is necessary to establish the reasons for such reduction since the anchovy fishers could be back to fishing any time. While the investment cost for a new fishing boat is not as expensive as that of an offshore vessel, but in most anchovy fishing boats preservation facilities are insufficient. Moreover, some fishers have also been reported to use destructive methods resulting in low quality of their catch and consequently in decreased competitiveness of the anchovy products (Khanh Hoa DECAFIREP, 2009).

Intermediaries: For the middlemen, the entry barriers are very difficult to hurdle especially for secondary middlemen.



Families of fishers anxiously waiting for fishing vessels to return to shore and hoping for good anchovy catch

Firstly, fishers would have difficulties with their fishing operations without obtaining loans from middlemen who have the financial resources and are willing to provide the needed capital to fishers. Moreover, it would be difficult for new entrants in the middlemen system because of the close relationship between fishers and current middlemen that had already been well established. This linkage makes the middlemen the most effective and highly competitive intermediaries in the value chain. However, in the entire value chain such effectiveness and competitiveness could be short run only as it seems unsustainable in the long run. The middlemen's operations are usually unprompted and orchestrated by private persons without any involvement from the government especially in the management aspects. This situation often leads to unfair distribution of the benefits among stakeholders resulting in some forms of hostility. Furthermore, such differences could influence the production processes and end products that are not in accordance with the standards making it difficult for the products to hurdle the strict commercial barriers in food safety and traceability, and subsequently to the shrinking market of the products.

Fish processing companies: Anchovy products are among the major export commodities of many Asian countries with Vietnam leading the group of exporting countries worldwide. However, the competitiveness in processing is still low because operations are usually small-scale, even if value-adding of the products for export had considerably increased during the recent years. Initiatives to increase the competitiveness of the processing companies could not be sustained because most companies are less concerned of the origin of the raw materials as well as on traceability, and are unable to comply with the food safety requirements of the market. This concern should be addressed in order to improve the competitiveness of the anchovy products in the value chain.

Fish sauce companies: Producing fish sauce has been a traditional undertaking in Vietnam, using processes that involve simple techniques and less investment costs. However, no new companies have recently entered or joined the business mainly because of the existing habit of Vietnamese consumers to use only brand named fish sauce making it difficult for new fish sauce products to gain the confidence of consumers. Although almost every Vietnamese know the processes of making fish sauce, but producing quality fish sauce as a traditional food industry that needs much experience and skills (know-how that had been accumulated in many years or inherited from generations). Nevertheless, the recent entry of the big corporation into the fish sauce industry has become an obstacle for many other small-scale fish sauce companies, considering that the financial status of the corporation is in very good condition and their fish sauce products are becoming more and more available in all segments of the domestic market because of the professionalism in their marketing system. This corporation also avails of the media to continuously market their products and adds personal touch in marketing by approaching prospective consumers every day to demonstrate the quality of their fish sauce. The entry of the corporation into the industry is expected to affect the profitability of other fish sauce companies to the extent of bringing new entrants to the verge of bankruptcy in short run as well as the present companies in the long run. The information provided by fishers during the interview indicated that the anchovy resource in Vietnam had been decreasing in recent years, and is likely to remain unstable because of the changing weather conditions. In fact, many fish sauce companies are now faced with constraints on the erratic availability of raw materials (anchovy catch) for processing. Therefore, sufficient supply of anchovy should be ensured for the sustainability of the fish sauce industry of Vietnam.

As indicated in **Fig. 3**, importers mainly determine the price of anchovy products for export, which is very common in Vietnam since the country has weak position in the global chain. However, the intensity of the importers' decision in imposing the price of dried anchovy is not as strong as for frozen anchovy because frozen products can be preserved for a long time while the shelf life of dried anchovy is quite short. Meanwhile, since the demand for anchovy products as raw

materials for other value-added products has been increasing, fish processing companies have taken advantage of such situation to bargain for higher price with the importers. In a way, fish sauce companies have also the clout in determining the price of anchovy products. Nevertheless, such trend of influence could change between middlemen and fish sauce companies depending on the season of anchovy catch. Specifically, the bargaining power moves from middlemen to fish sauce companies during the high season and *vice versa* in the low season.

Market Conduct

As shown in **Fig. 4**, the fishers are always the lowest price takers for they have almost no power to determine the price of their catch for lack of sufficient information about the value of their catch. Being financially indebted to the middlemen who are their most dependable source of loan for their fishing operations, more often than not, fishers sell their catch at night although the selling price is confirmed only until the following morning. This situation enables the middlemen to dictate low market price for the anchovy catch with the knowledge of fishers who are not in the position to negotiate for higher price because they do not have the facilities to preserve large quantity of anchovy catch overnight.

Market Performance

Nonetheless, the results of the study (**Table 3**) also suggest that most of the economic benefits are gained by the first stakeholders (fishers) and the last stakeholder (fish processing/fish sauce companies) of the value chain. In spite of the aforementioned factors that seem to favor the fishers' economic conditions, fishers are still considered as among the poorest in the economy while middlemen are rather the wealthier groups. Meanwhile, in terms of market and utilization, the maximum economic benefit goes to stakeholders involved in distributing anchovy for export, followed by stakeholders in the anchovy domestic market, and stakeholders in the anchovy as raw materials for fish sauce.

Finally, as shown in **Tables 4.1 to 4.3**, it appears that the middlemen seem to obtain the least benefits in the value chain

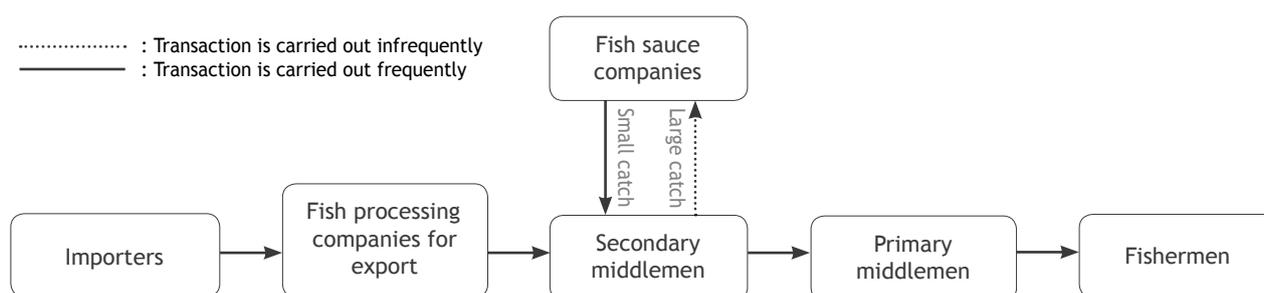


Fig. 3. Price formation process of anchovy products

Table 3. Distribution of cost and profit in the value chain of anchovy products (USD 1.00 = VND 20,610¹)

Criteria	Unit	Anchovy for export		Anchovy for domestic market		Anchovy for fish sauce	
		Value	Rate	Value	Rate	Value	Rate
1. Fishers							
Total cost	VND/kg	4,578	11.12	4,578	27.47	4,578	22.89
Operating cost per trip	VND/kg	1,752		1,752		1,752	
Labor cost	VND/kg	1,999		1,999		1,999	
Depreciation + maintenance	VND/kg	804		804		804	
Interest	VND/kg	23		23		23	
Marginal profit	VND/kg	15,422	37.46	5,422	32.53	(78)	(0.39)
Output price	VND/kg	20,000		10,000		4,500	
2. Primary middlemen							
Input price	VND/kg	20,000		10,000		4,500	
Total cost	VND/kg	300	0.73	300	1.80	300	1.50
Operating cost per trip	VND/kg	250		250		250	
Depreciation cost	VND/kg	50		50		50	
Output price	VND/kg	22,000		11,000		5,000	
Marginal profit	VND/kg	1,700	4.13	700	4.20	200	1.00
3. Secondary middlemen							
Input price	VND/kg	22,000		11,000		5,000	
Total cost	VND/kg	350	0.85	350	2.10	350	1.75
Transportation/transaction costs	VND/kg	300		300		300	
Depreciation cost	VND/kg	50		50		50	
Output price	VND/kg	24,000		12,000		5,500	
Marginal profit	VND/kg	1,650	4.01	650	3.90	150	0.75
4. Fish processing-related companies							
4.1 Fish processing companies - for export							
Input price/kg materials	VND/kg	24,000					
Total cost/kg materials	VND/kg	6,667	16.19				
Production costs	VND/kg	5,833					
Transportation/transaction costs	VND/kg	167					
4.2 Fish processing companies - for domestic market							
Input price/kg materials	VND/kg			12,000			
Total cost/kg materials	VND/kg			3,667	22.00		
Production costs	VND/kg			3,333			
Transportation/transaction costs	VND/kg			167			
Depreciation cost	VND/kg			167			
Output price/kg materials	VND/kg			16,667			
Marginal profit	VND/kg			1,000	6.00		
4.3 Fish sauce companies							
Input price/kg materials	VND/kg					5,500	
Total cost/kg materials	VND/kg					14,000	70.00
Labor costs	VND/kg					10,060	
Packing costs	VND/kg					1,500	
Transportation/transaction costs	VND/kg					1,275	
Depreciation cost	VND/kg					1,165	
Output price/kg materials	VND/kg					20,000	
Marginal profit	VND/kg					500	2.50

Source: calculated from survey data, 2010

¹ Exchange rate in July 2010

Table 4.1. Distribution of economic value among stakeholders in the value chain of anchovy products for export
(Unit: %: USD 1.00 = VND 20,610)

Stakeholders Indicators	Fishers	Primary Middlemen	Secondary Middlemen	Fish processing company - for export
1. Value added				
Output price (VND)	20,000.00	22,000.00	24,000.00	41,167.00
Value added	48.58	4.86	4.86	41.70
2. Created value				
Marginal profit/total cost	336.87	8.37	7.38	34.24
Marginal profit/incremental cost	336.87	566.67	471.43	157.50

Source: calculated from survey data, 2010

Table 4.2. Distribution of economic value among stakeholders in the value chain of anchovy products for domestic market
(Unit: %: USD 1.00 = VND 20,610)

Stakeholders Indicators	Fishers	Primary Middlemen	Secondary Middlemen	Fish processing company - domestic market
1. Value added				
Output price (VND)	10,000	11,000	12,000	16,667
Value added	60.00	6.00	6.00	28.00
2. Created value				
Marginal profit/total cost	118.44	6.80	5.73	6.38
Marginal profit/incremental cost	118.44	233.33	185.71	27.27

Source: calculated from survey data, 2010

Table 4.3. Distribution of economic value among stakeholders in the value chain of anchovy products for fish sauce
(Unit: %: USD 1.00 = VND 20,610)

Stakeholders Indicators	Fishers	Primary Middlemen	Secondary Middlemen	Fish sauce Company
1. Value added				
Output price (VND)	4,500	5,000	5,500	20,000
Value added	22.50	2.50	2.50	72.50
2. Created value				
Marginal profit/total cost	-1.70	4.17	2.80	2.56
Marginal profit/incremental cost	-1.70	66.67	42.86	9.09

Source: calculated from survey data, 2010

Table 5. Estimates of the average income of stakeholders in the value chain of anchovy products

Stakeholders	Sample size	Marginal profit (VND/kg)	Quantity (kg)	Income (VND)
1. Fisherman	46		103,417	157,400,674
From anchovy for export		15,422	5,171	79,744,849
From anchovy for domestic		5,422	15,513	84,109,046
From anchovy for fish sauce		(78)	82,734	(6,453,221)
2. Primary middleman	2	200	2,000,000	400,000,000
3. Secondary middleman	1	150	5,000,000	750,000,000
4.1 Fish processing company - for export	1	10,500	1,000,000	10,500,000,000
4.2 Fish processing company - for domestic market	2	1,000	2,000,000	2,000,000,000
4.3 Fish sauce company	3	500	2,000,000	1,000,000,000

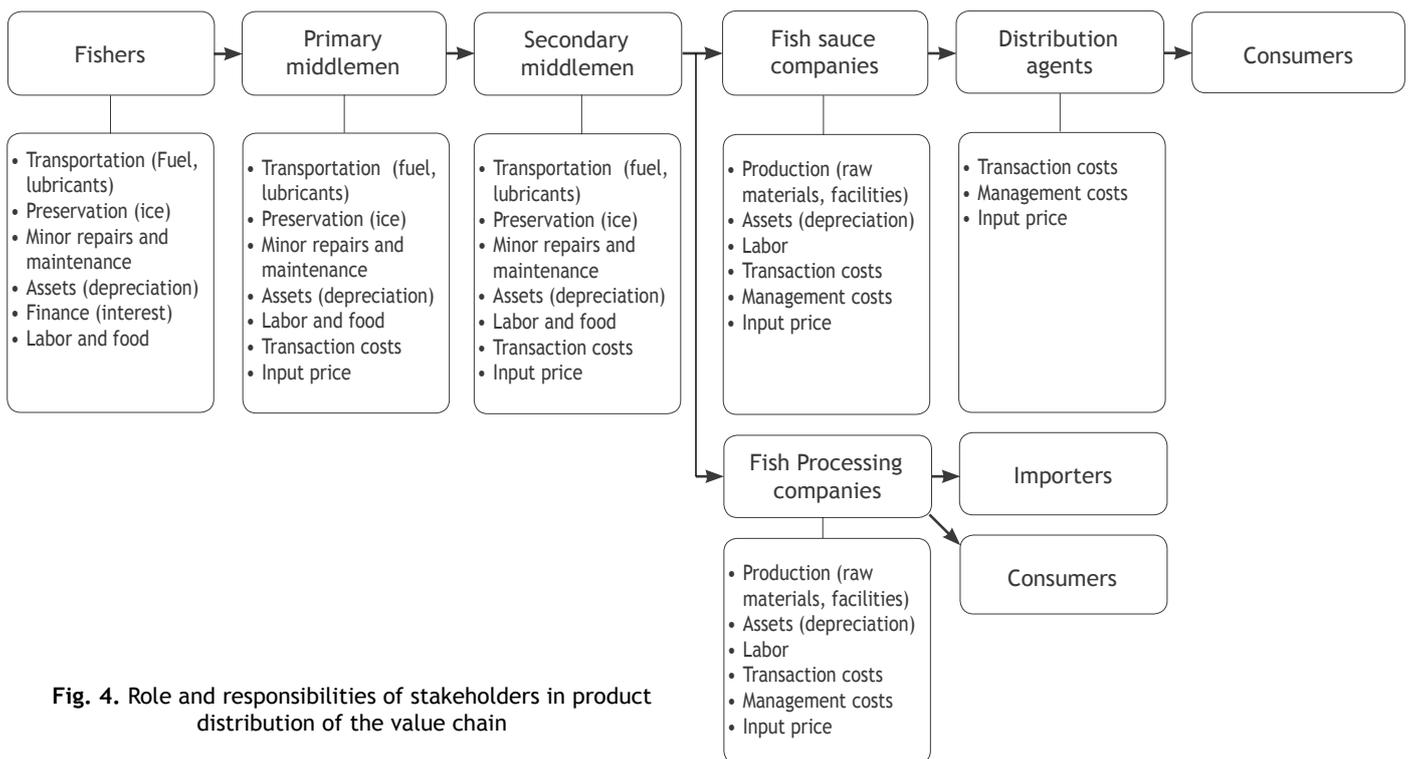


Fig. 4. Role and responsibilities of stakeholders in product distribution of the value chain

of anchovy products. Nevertheless, if the total income is taken into consideration (**Table 5**), the highest economic benefit goes to the last stakeholder in the value chain (fish processing companies, fish sauce companies). More specifically, the fish processing companies producing anchovy products for export would get the highest income because as the raw materials are transformed to high-value products the value along the chain could increase in several folds. Nevertheless, these companies could also encounter some risks especially when the strict requirements for food safety, traceability and certification of marine fishing products, are not complied with. The second highest benefit goes to the middlemen. Although the contribution of middlemen in terms of value adding and profit could be lower than the other stakeholders in the value chain, their output price is determined by importers as well as domestic producers, and thus, have the advantage of collecting large volumes of fish from the fishers and as a result, their total income could be very high.

The least benefits go to the fishers. Fishing is a very risky job and the price of fish catch depends entirely on the behavior of importers and domestic producers. Meanwhile, middlemen seem to have no risks at all because transactions are carried out based on the principle that input price is formulated from the output price. Therefore, fishers usually take more risks than the other stakeholders because fishing operations could be influenced by the weather conditions. Moreover, the market rule in supply and demand is: the more the fish, the lower is the price.

Policy Implications

The bottom line is fishers get the least benefits in the value chain in spite of the high risks that they have to face during the fishing operations. Therefore, policies should be developed that would aim to give more support to fishers. The proposed policy recommendations for the three types of anchovy products are shown in **Box 2**. Moreover, additional policies are also proposed to improve the benefits of all stakeholders in the value chain for different types of anchovy products as indicated in **Box 3**.

Conclusions

In a highly competitive fisheries industry worldwide, cooperation in the value chain of fish and fishery products should be considered as a vital tool for sustainable fisheries development, which should also be considered for the sustainability of anchovy fisheries in Khanh Hoa Province, Vietnam considering the economic importance of the fishery to the country's economy (Nguyen Thi Tram Anh, 2009). Enhancing the cooperation along the value chain of the fish products not only offers opportunities for the stakeholders to improve their competitiveness in the chain but also creates potential improved benefits that could be gained along the chain. Therefore, it is important to build up the necessary institutions for developing such cooperation in the value chain. Nonetheless, local authorities should also provide constructive solutions to support the fishers to ensure that equal benefits also go to them as with the other stakeholders.

Box 2. Proposed policy recommendations for all three types of anchovy products

- Provide the necessary legal frameworks such as regulations, requirements and standards to all stakeholders involved in the value chain in order that the quality of their products is ensured while food safety is assured for the sake of the consumers, and that the environment is protected in all stages in the value chain for the benefit of the future generations. Regulations to be established by the government should be specific enough for all stakeholders to easily cooperate and agree with the conditions, and should target the increased cooperation between relevant authorities and stakeholders in order to fulfill the requirements of consumers.
- Establish credit systems for fishers to reduce their dependence on middlemen for their financial requirements in fishing and eventually minimize the market power of middlemen on the price of their catch. As noted from the interview, fishers have difficulties in accessing loans from other sources in view of the strict requirements in terms of collaterals.
- Provide the necessary support in terms of technologies to fishers to enable them to preserve their catch in the most economical way. At present, fishers could not preserve their catch for a long period of time due to inadequate preservation equipment onboard fishing boats. For this reason, fishers usually sell their catch immediately to middlemen even if the agreed price is not confirmed, giving the power to bargain for the price to the middlemen.
- Develop an agricultural insurance system to be applicable to fishers to reduce their worries about the future of their families while they undertake the very risky fishing operations.
- As for the sustainable development of fisheries, intensify campaigns to strictly prohibit the use of destructive fishing methods, adopt closed seasons or areas as and when necessary to protect the spawning and nursing areas of many marine aquatic species. During the interview, many fishers indicated that approximately 75% of anchovy must be sold to fish sauce processing companies immediately upon landing. One of the reasons given was the diminishing quality of the anchovies that might have been harvested using destructive fishing means such as “nghe pha xuc”. Fishers should therefore be encouraged to move away from adopting the “nghe pha xuc” towards purse seine fisheries to ensure the quality of anchovy catch.

Box 3. Policies to improve the benefits of stakeholders in the value chain of anchovy products

Anchovy for export: In order to increase the competitiveness of the exporters and other stakeholders in the value chain, the following approaches should be considered: (1) collaborative mechanism should be developed in the production, purchasing and selling of the products through some forms of fishing cooperatives or production groups in order to ensure that traceability could be carried out (Nguyen Thi Tram Anh and Huynh Phan Thuy Vi, 2010); (2) information dissemination should be intensified especially on the various commercial/ technological barriers employed widely making sure that all stakeholders can access to such information; (3) use of log books should be promoted while purchasing of products without knowing their origin must be avoided, and compliance of international regulations and requirements by stakeholders especially the fish processing companies must be supervised and supported by appropriate government authorities; (4) regulations that aim to limit and stop exporting immature anchovy should be formulated to ensure sustainable development of the fishery; and (5) government and local authorities to continuously compile relevant information from international markets to diversify risks and avoid the pressure of imposing low price on the fishery products.

Anchovy for domestic market: Although this product is mainly for local consumers and tourists, requirements on quality could not be as strict as that for products meant for the export market. Nevertheless, local authorities should supervise the operations of relevant companies to ensure that these fulfill food safety and traceability for the maximum benefits of consumers.

Anchovy for fish sauce: To ensure enhanced benefits of consumers and promote fair competitiveness among producers, government authorities should make efforts to: (1) impose strict and clear discipline on companies in fulfilling the requirements for quality; and (2) support the fish sauce industry by seeking for more distribution markets for their products.

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