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Food Safety and Vietnam EU Pangasius strategy

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Abstract
Using Hirschman's theoretical framework we evaluated the competitive position of Vietnamese pangasius export industry and the strategies employed by the private sector to increase market share in the EU. The authors organized focus group discussions, and interviewed 50 pangasius processors and exporters, and five government officials. The results show that most enterprises exploit the compliant, reactive and defensive strategies to maintain market share. A few firms employ the proactive/offensive strategies. These command larger EU market share; have more years of experience in processing; and are more vertically integrated than those adopting an offensive/reactive or reactive/defensive stance.

Key words: Hirschman, Pangasius, food, safety, strategy, Vietnam

1. Introduction

Food safety and health concerns have played an increasingly important role in determining whether Vietnam pangasius producers can access export markets. The issues are directed by public and private standards. Public standards are generally rules, mandatory technical regulations, and private standards are commonly voluntary requirements (Palma et al., 2010). The development of private standards relating to fish safety has raised insightful questions about the role of public relative to private criteria in food safety administration. There have been debates concerning legality and the impact of private standards on the structure and working practice of global pangasius market (Henson and Humphrey, 2008; Henson and Caswell, 1999).

Researchers and policy makers concerned about the legitimacy of private standards have associated the impact of these standards on global agriculture market from two viewpoints: (1) On one hand, researchers claim that these could undermine the competitiveness of Vietnam as a developing country (UNCTAD, 2007; 2008) and/or remove small farms from the value chain in which significantly potential opportunities exist for livelihood enhancement (Dolanand Humphrey,2000; Graffham et al., 2007); (2) On the other hand, some believe that the required standards enforced on Vietnam are catalysts for the requisite procedure for upgrading and empowering its limited resource farmers and giving them a competitive edge along the value chain (Jaffee and Henson, 2004a, 2004b, World bank, 2005; Henson, 2007). These standards are the promoters for enlightened change, and encourage investment in supply chain modernization. To apply safety practices and to improve quality control in aquaculture and fish production requires the clarification of the essential role of governments in fish safety and aquaculture health management. Governments can play a vital role by

employing strategies to minimize the impact of standards imposed by more developed countries on 'standard takers', the developing countries (Henson and Jaffee, 2008). The government of Vietnam (GOV) may employ these strategies on behalf of exporting firms, or individual exporting firms may themselves embrace these strategies in order to gain a competitive edge in the value added export market.

Once the strategic plans are accepted and amended to respond to changes in external standards in a broader, trade environment they become amenable to positioning firms domestically for export planning. In the Vietnam export market, one is not sure of the strategies employed by the public and private sectors to increase or maintain market share in the EU pangasius market since the market has experienced a downturn from 2011 to the present. Hence, it is important to inquire about efforts made by public institutions and Vietnam seafood processors to meet strict pangasius export standards for the EU market. What are their short and long term strategic approaches? This study adopts new analytical procedures to examine the pagansius export market where a small exporting country adopts strategies to improve and maintain market share in a global market. The study will supply innovative tactical tools to policy makers in decision making to enhance commodity exports in a competitive environment.

In this study, we evaluate the strategies employed by the Vietnamese private sector to increase market share for pangasius in the EU market. We also determine the factors that influence the sector's strategic decisions. The rest of the paper continues with an analytical framework, literature review, methodology, results, discussion, conclusion and policy recommendations.

2. Analytical framework

Henson and Jaffee (2006) modified and applied the analytical framework of Hirschman (1970) to analyze the impact of food safety standards on developing countries and the strategies these poor nations may adopt in response to stricter food safety standard requirements (Figure 1). Hirschman's modified model states that developing countries can choose one of these strategic reactions: Exit, which implies switching to other markets, changing products or seeking other buyers whose standards are cost-efficient; Comply, whereby a set of legal, administrative, technical and organizational steps are taken to meet product or processing requirements; or Voice, in which developing governments and exporters are urged to influence the standards they are facing through negotiations (with local technical authorities of their business partners, or with a big buyer) or formal complaints (through international sites like the WTO SPS Committee) (Henson and Jaffee, 2008).

This framework is useful to evaluate the impact of capability enhancement. Capability building seen as an attempt to maximize strategic options suitable for both governments and private businesses in developing countries confronted with new standards. These strategies can generate profits in a competitive market with wider economic and societal outcomes (Neeliah and Neeliah, 2013). Vietnamese pangasius suppliers can use reactive or proactive strategic reactions, relating to the time when one makes efforts to respond to planned actions. Reactive strategy is making efforts to comply with standards. Proactive strategy is predicting the development of these standards in the future and making efforts to invest in technology and the ability of management to achieve expected outcomes (Henson and Jaffee, 2008; Hirschman, 1970; Lemeilleur, 2012).

Other approaches to describe the reaction of developing countries to new standards in

agriculture and food production in international markets are defensive and offensive. A defensive strategy is a plan to maintain the original form and minimize the impact of changes (Jaffee and Henson, 2006; Neeliah et al., 2011). Offensive strategy often involves efforts to use standards to gain competitive advantage, including cases where supplemental investment is required over the minimum to meet compliance requirements. Proactive and offensive strategies have advantages in market access and share maintenance (Jaffee and Henson, 2008). There are examples of application of the modified framework in a number of developing countries.

STRATEGY/REACTION	REACTIVE	PROACTIVE
EXIT	Wait for change in standards; no intention to comply; exit the market	Anticipate changes; plan exit; seek other market avenues
COMPLIANCE (LOYALTY)	Wait and comply with changes; make required adjustments.	Anticipate changes; go ahead and make changes before anticipated dates
VOICE	Raise voice; ones standards are required	Help in standard creation; and negotiate before standards are adopted
OFFENSIVE	Maintain status quo; keep the important change to the minimum; mimic the present standards	Anticipate standards and plan to use required standards to gain competitive advantage of firm
DEFENSIVE	Maintain present status; place barriers to change;	Anticipate change and develop a Mixed reaction to change.

Fig. 1. *- Strategic response to food safety standards.*

In 2005, the World Bank conducted research involving fish and fishery products in India (Kerala), Kenya, Nicaragua, Senegal and Thailand. Although these countries exported different products (shrimp from Kerala, Nicaragua and Thailand; coelacanthidae from Kenya and Senegal) to different destinations, we still can make a comparison among strategic approach methodologies suitable for the development of food safety standards. The major approaches of these countries were reactive, compliant or defensive – by both government and the private sector.

In both India and Kenya, the dominant strategy to handle food safety was a 'reactive' strategy of 'compliance' by government and the private sector (Henson et al., 2005; Neeliah et al., 2013). The approaches resulted in improvements to processing and product exports, including sanitation and antibiotic control upgrades to respond to changes demanded by the EU and the US or the requirements of major importers (Henson and Jaffee, 2008). In Kenya and Senegal, they were slow in taking action until the European Commission sent their inspectors. In the case of Kenya, that led to a restriction on sales to the EU. The Kenyan and Indian governments carried out some initial reforms within their legal frameworks, but still

not enough to comply with the requirements of the EU (Neeliah et al., 2011).

There are examples from all countries where exporters have used proactive and offensive strategies. These firms predicted the general direction of food safety standards and made remarkable progress in upgrading their conditions to meet the standards before their competitors could make the necessary adjustments. In most cases, these firms represented a relatively small part of their industries (Henson and Jaffee, 2006), but they clearly stuck to their leadership positions. Some of the exporters left the industry in order to maintain control, while others focused on their business in other markets with lower standards.

3. Research methodology

The process included two steps. First, the researchers conducted focus group discussion with five officers and two directors representing pangasius processors and exporters, who outlined an overall picture of the production line, processing and export as well as the responses made by the industry beyond the increasing pressure of food safety standards. The study used questionnaires based on the framework of Henson et al. (2002). The questionnaire was sent to export enterprises. The content of the questionnaire comprised two parts. The first part examined the following aspects of producing, processing and exporting pangasius: the enterprise scale, product structure (raw or value added), distribution channels used (direct access to exporting market or via intermediaries) and procurement channels used (the degree of self-investment in the enterprises). Since most firms in Vietnam have limited capacity to react to changes in standards and do not have a unified voice, we did not maintain this reaction. Most firms tried to remain loyal to a market, but fixity of capital did not allow them to enter and exit the market freely; therefore, the exit strategy was not included and the only strategic option considered was that of compliance.

In addition to primary data, secondary data were collected from reliable sources such as Vietnamese Association of Seafood Exporters and Producers (VASEP)[2015, 2016] and the Food and Agricultural Organization (FAO)[2016], and the World Bank (2016) to fully assess the factors influencing strategy selection. The study used a non-probability sampling method (a process of convenient sampling) to identify participants. The number of samples taken was 50 (out of 130 exporting enterprises in the study area, according to figures from the Vietnam Pangasius Association as of September 23, 2014). The acceptable number of samples used for analysis was 41. Pangasius export firms were questioned about the production and processing of pangasius in An Giang, Can Tho and Dong Thap Provinces. The survey data were collected within three months, from October 2015 to January 2016. Data were then coded and analyzed using SPSS 16.0. Since companies could choose more than one response, the percentage of responses for each strategy was determined by dividing the number of responses by the total. In order to group the responses by strategic stances, we performed cross-tabulation of responses by strategic reaction. Then characteristics were grouped by firm type.

4. Results

4.1 Characteristics of the Vietnamese pangasius processing and exporting industry

Pangasius hypophthalmus and Pangasius bocourti are mostly farmed in the Mekong Delta

in Vietnam. Fish production and trade have increased rapidly over the past 20 years and Vietnamese fish has become a significant component of the global white fish supply. Table 1 shows that Vietnamese pangasius was imported by many countries, namely the EU, the US, ASEAN, Brazil, Mexico and others, during the period of 2010-2014. It also shows that the EU is the largest importer market, although its figures declined from 35.85% in 2010 down to 19.5% in 2014 (Figure 2). Moreover, it is recognized that the EU imported Vietnamese pangasius continuously during those years, while some countries, namely Brazil, Mexico, Colombia, Saudi Arabia, Russia, Greece, Japan and Australia, imported the product on an interrupted basis.

Pangasius is exported mainly in the form of frozen fillets; in second place are fresh fillets, and then frozen, whole and fresh whole fish. The fish are packaged in various forms and are placed in polythene bags weighing from 500g to 1.0 kg, packed in cartons (Centre for the Promotion of Imports (CBI, 2015)). The fish are produced and processed in compliance with strict international food safety standards (Global Good Agricultural Practices (GlobalGAP), Aquaculture Stewardship Council (ASC) and Best Agricultural Practices (BAP)) and are subjected to the same stringent regulations as other imported species.

***Tab. 1** - Importing market share of Vietnam pangasius from 2010 to 2014*

Importing Markets	Year 2010 (%)	Year 2011 (%)	Year 2012 (%)	Year 2013 (%)	Year 2014 (%)
EU	35,8	29,1	24,41	21,9	19,5
US	12,4	18,3	20,57	21,6	19,0
ASEAN	5,5	6,1	6,33	7,1	7,7
Brazil	NO	NO	NO	6,9	7,0
Mexico	6,0	NO	NO	5,6	6,5
China and HK	3,0	3,0	4,18	5,2	6,4
Colombia	NO	NO	NO	3,3	4,0
Saudi Arabia	NO	NO	NO	2,8	3,3
Japan	27,6	0,1	0,17	NO	NO
Russia	3,6	NO	NO	NO	NO
Greece	3,1	NO	NO	NO	NO
Australia	3	NO	NO	NO	NO
Others	NO	43,1	44,35	25,6	26,6

Source: VASEP, 2016

The classification of strategic groups in Table 2 shows the following divisions: proactive/offensive, reactive/offensive and reactive/defensive. Figure 3 shows the frequencies of reaction adoption. The proactive/offensive strategy had an aggregate of 33 or 18.4%; the reactive/offensive strategy was most common, at 98 or 54.7%; and the reactive/defensive strategy had 48 or 26.8%. As can be seen in Table 3, the exporters that have adopted the proactive/offensive marketing strategy are larger, with 2,000 or more employees, and contribute more than 35% of the EU market share.

4.1.1Firm size and experience exporting to the EU market

Firm size and capital are key indicators that influence strategic decisions. However, this

study only employed the firm size perspective due to limited information. According to Decree 56/2009/NĐ-CP on supporting small management enterprises (SMEs), firms of more than 300 employees are considered 'large-size' in contrast to small and medium size. The survey results show that most of the firms are of relatively large size (87.5%). Table 3 shows that the largest firms, with 2,000 or more workers, were in the proactive/offensive category, and the smallest firms were in the reactive/defensive category.

Tab. 2. - *Description, frequency and classification of firms based on their reactions*

Reaction name	Description of reaction	Classification of reaction	Adopting frequency/percent
Having sufficient export capacity to EU market	Already investing in advance to satisfy market standards	Proactive, Offensive	10/5.6%
Exploring information support from public institutions	Finding information supply sources continuously in order to update and forecast the application of new market standard	Proactive, Offensive	14/7.8
Purchasing fish material from contracted farms	Set up the coordination in advance with farmers to control quality of raw material	Proactive, Offensive	9/5.0
Establishing owned farms	Do upstream vertical integration to self-control supply phase in supply chain because of inability to control inputs quality	Reactive, Offensive	32/17.9
Focusing on value – added product	Restructuring products category from raw to value – added product in order to reduce the competition pressures	Reactive, Offensive	15/8.4
Exploring new markets as contemporary alternatives	Find new market to maintain processing activities, however continuously upgrading processing to satisfy EU market standard	Reactive, Offensive	21/11.7
Exploring capital supporting from the government and financial body	Finding sources of capital for upgrading processing procedures and facilities	Reactive, Offensive	30/16.7
Hiring consulting services and technicians	To understanding and finding the minimal cost in investing in facilities/procedures to obey the standard	Reactive, Defensive	20/11.2
Upgrading processing facilities	Investing facilities and working conditions just enough to satisfy the standards	Reactive, Defensive	20/11.2
Exiting EU marketing, finding new target market and concentrating on domestic market	Finding a new target including domestic market which have less stringent standard	Reactive, Defensive	8/4.5

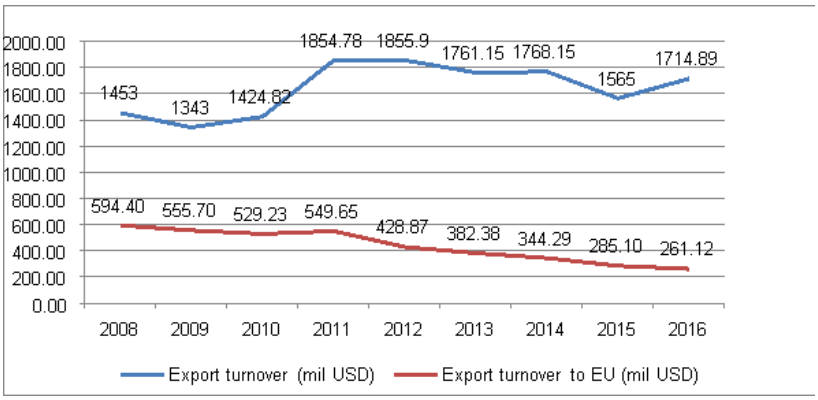

Fig. 2. *- Vietnam pangasius export sales in all markets and to EU, 2009 to 2014.*

Most of these Vietnamese pangasius processors had been in operation for a long time: more than 11 years on average. Of the firms surveyed, 90% answered that they had exported products to the EU for more than 5 years, while 10% reported less than 5 years. Table 3 shows that the proactive/offensive group had engaged in processing and exporting for the longest time, compared to the reactive/offensive and reactive/defensive groups.

4.1.2 Process of achieving EU market requirements

EU requirements for fish and seafood can be divided into: (1) 'Musts', requirements one must meet in order to enter the market, such as the General Food Law. (2) Common requirements that competitors have already implemented, in other words, the ones that must be followed to keep up with the market; and (3) Niche market requirements for specific segments (CBI, 2015). In order to export pangasius to the EU, Vietnam processing companies have made investments to comply with more stringent food safety and sustainability standards.

Hazard Analysis and Critical Control Point (HACCP) is the main system for ensuring safety in the food industry worldwide. The survey indicated that 100%of Vietnamese pangasius processors completely applied this system. Based on HACCP, food processing companies continue to apply more comprehensive food safety assurance systems, such as the International Organization of Standardization (ISO) system. Currently, 53.7% of the companies surveyed owned ISO 9001; 37.5% ISO 22000; 12.2% ISO 17025; and 7.5% ISO 14000.

In the EU, the most important food safety standards are set by BRC, IFS and GlobalGAP. The suppliers for British retailers require BRC, while Germany and France require IFS. The results showed that BRC and IFS were adopted by 75% and 62.5% of the companies, respectively. GlobalGAP is a standard that promotes Good Agricultural Practices, intended to control the whole process from farm to table; the survey showed that 65% of the Vietnamese pangasius processors were certified under GlobalGAP. The proactive/offensive firms adhered to the higher ASC standard, while the reactive/offensive and the reactive/defensive firms stuck to the GlobalGAP standard (Table 3). Finally, sustainability standards (ASC) or organic certifications (Naturaland Certified Farms) are seen as niche market requirements. The percentage of Vietnamese pangasius processors with ASC certification was the lowest (32.5%).

4.1.3 Leadership, vertical integration and trends in the Vietnamese pangasius industry

Leading firms play an important role in the Vietnamese pangasius industry, since they can set an example for others to follow. Vinh Hoan, Hung Vuong, IDI, Agifish and Hung Ca were the top five pangasius exporters in 2015. For the period 2010-2015 they were responsible for 32% of total market share in volume and 36% in value, on average. Their processing capacities are larger than the average (VASEP, 2015). For instance, Hung Vuong processed 1,100 tons of raw fish per day, Vinh Hoan 450 tons, and Agifish and IDI 350 tons per day.

These firms lead in investing and modernizing their equipment, machines and facilities. The survey discovered that nearly 78% of these companies had their own farms. The others sourced their raw products from contracted farmers, a kind of vertical coordination. The proactive/offensive firms were at the forefront with their leadership stance, supplying more than 80% of the raw materials they processed, whereas the reactive/offensive and reactive/defensive firms supplied less than 80% of their raw materials (Table 3). Supplying their own raw materials helps them to minimize product variance and better control the quality overall. Heavy pressure from importers and food safety demand requirements have resulted in significant changes in the Vietnamese pangasius value chain (Khiem et al., 2010; UNIDO, 2010, 2013).

***Tab. 3**. - Characteristics of pangasius processing and exporting firm under different reactions*

Firm Characteristics/Reactions	Proactive-Offensive	Reactive-Offensive	Reactive-Defensive
Firm size (Number of labor)	>2000	1000-2000	<1000
Experience in processing and exporting	>10 years	<10 years	<10 years
Experience in exporting Pangasius in EU	>5 years	<5 years	<5 years
Private standard owning	High standard(ASC)	Common standard (GlobalGAP)	Common standard (GlobalGAP or lower)
Capacity of their owned farm	Supply more than 80% demand of raw material	Supply less than 80% demand of raw material	Supply less than 80% demand of raw material
Average % vertical coordination/contract with other farmers	<20%	>20%	>20%
EU market share	>35%	10-35%	<10%
Leadership coordination	Yes	No	No
Suitability of legal framework	Yes	Yes	Yes
Private sector/Technical Management	Yes	Yes	Yes
Administrative support	Member of VASEP	Member of VASEP	Member of VASEP
Machinery and equipment	New/Modern	New	New

4.1.4 Industrial capacity and reputation

Industry management technical capacity is measured based on the role of pangasius in the fishery industry, its products and its foreign market channel. In 2010-2015, the contribution of

pangasius to total fishery exports averaged 26.4%. In the world market, Vietnam is the dominant pangasius producer and exporter (FAO, 2014). The survey indicated that fillets made up 88.4% of all firm exports; the figure for ready-made/ready-to-eat product is lower, 12.6%. Meanwhile, 24% of products are sold to local retailers.

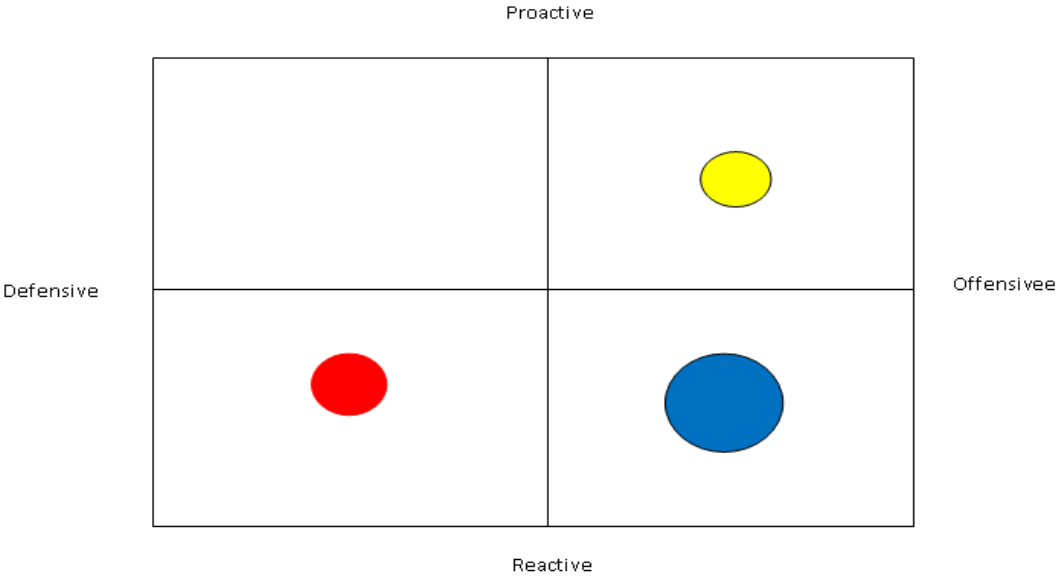

Fig. 3. *- The stance adopted by processors in compliance to EU market standards*

Although Vietnamese pangasius is a preferred food worldwide because of its color, flavor, high nutrition and affordability, in the past few years, its reputation has been negatively affected by poor publicity and product refusals. Some of the controversy has been over the clarity and accuracy of information on the product packages, i.e., net weight and gross weight. It was found that the moisture content or proportion of glazing in frozen pangasius fillets was too high, and after defrosting, the actual net weight of the fish was lower than what was on the packages (Qualasa Expertise, 2010). Thus, the net weight reported on the product packages was not accurate, which was considered a case of trade fraud. However, the study shows that all firms received technical and administrative support from the public sector. The positive/offensive firms adhered to high standards, while the reactive/offensive and reactive/defensive firms adopted common standards (Table 3).

4.1.5 Public administration capacity

4.1.5.1 Suitability of legal/regulatory framework and clarity of institutional responsibility and procedures

According to Bank (2016) in his research titled ‘Current legal framework and its effects on pangasius supply chain in Vietnam’ under the SUPA project, there is a slight difference between the Vietnamese and European legal frameworks. The two systems have a common point of view on various important aspects, such as environment, social responsibility, quality, food safety and food safety registration. Vietnamese regulation has implemented a stringent system of advanced production techniques, pond design, construction and appropriate planning for aquaculture (Khoi, 2011).

Although food safety and quality are major issues in the regulatory framework, the implementation is hampered by poor institutional enforcement (Khoi, 2011). Quality control, laboratory testing, and quality evaluation are critical to standard enforcement. The efforts to control quality are heavily dependent on bureaucratic paperwork, but not on practical random testing (Bank, 2016). However, all the firms surveyed, whether proactive/offensive, reactive/offensive or reactive/defensive, observed the rules of the Vietnamese legal framework (Table 3).

4.1.5.2 Public sector administration/technical capacity

The overall responsibility for fish quality management in Vietnam lies with the Ministry of Agriculture and Rural Development (MARD). The Vietnam Association of Seafood Exporters and Producers (VASEP) have the main responsibility to support the development of Vietnam's seafood industry. The question is, do pangasius supply chain participants receive any support from these institutions? The assistance provided is still limited. Support in terms of capital acquisition, investment in infrastructure, and environmental management is still lacking (Genschick, 2011). According to the information presented in table 3, all the firms surveyed had the technical capacity and received support from VASEP.

4.2 Strategic options of processing companies responding to quality standards

The strategy adopted by the majority of Vietnamese processing companies involves a wait-and-see attitude. This is a normal reaction towards new standards. There is no emphasis on forecasting new trends in quality or estimating the opportunity cost of not investing in advance to satisfy these standards. There are different points of view on how to behave. Only 4% of total reactions followed the exit strategy. Some companies (26%) tried to maintain the market by reducing costs, but were discouraged by the stringent new quality criterion. In spite of the small market share (19%), the EU is still one of the most important export markets for pangasius. Of the firms that adopted a compliance strategy, some (18.4%) adopted proactive/offensive strategic options, which may be considered progressive and the best option to maintain market share, while the reactive/offensive strategy was the most common (54.7%), and a number of firms adopted reactive/defensive stances (26.8%) (Tables 3&4). Figure 2 shows the relative size of the options: the reactive/offensive and reactive/defensive strategies were more popular than the proactive/offensive strategy.

Firms with contrasting characteristics behaved inconsistently under stringent standard pressures. There are moderate differences between those who adopted the proactive/offensive approach and those who adopted the reactive/offensive or reactive/defensive approaches. The firms that selected the proactive/offensive approach are identified as large based on number of employees, farming capacity, market share, experience and investment in premium standard certification. These characteristics reveal the underlying reason why these firms pursued the most challenging but forward-looking approach. Such firms can take advantage of economies of scale to reduce the cost of investing in food safety standards, as well as the benefits of vertical integration, the market forces relating to a large contribution to market share, and their experience in processing and exporting.

5. Discussion

The EU lays down harmonized requirements governing hygiene and food safety, and Vietnam fish exporters are supposed to follow them. There might not be adequate institutional capacity to ensure that standards are met (Henson and Mitullah, 2004). Hence, some firms may choose to exit. The results show that a large percentage of firms are satisfied with the EU market and may choose to be compliant and remain in production. However, Vietnam's pangasius market share is on a decline and the profit margin is tightening. Farmers and processors are not behaving collectively; the industry does not have a unified voice and does not receive much public support. It seems that most of the reactions to higher standard requirements are private. When there are so many small producers of pangasius with limited capacity of less than 1.0 ha supplying small amounts to processors and exporters, the process of adhering to standards becomes difficult. There is a need for both unified public and private partnership to undertake joint sector tasks on behalf of collective groups (Neeliah and Neeliah, 2013) to present their circumstances to the more developed world in cases of excessively stringent standards. As stated by Henson and Jaffee (2008) and Ponte and Gibbon (2005), there is a recognition of potential efficiencies associated with collective and collaborative actions, while there are increasing interdependences and complementarities between public and private actions.

The larger private companies that adopt more proactive/offensive strategies can take the lead and allow the smaller producers with more reactive/offensive or reactive/defensive strategies to follow. The public sector can speak on behalf of the collective group, providing a formidable international voice for pangasius processors and exporters. As stated by Henson and Jaffee (2008), the most positive and potentially advantageous strategy combines 'voice' and 'proactivity'. Group certification is one case in which the formation of collective action groups can be helpful (Lemeilleur, 2012; Neeliah and Neeliah, 2011).

Most companies are more likely to be compliant and adopt reactive/offensive or reactive/defensive strategies because of smaller size and limited capacity. That means they are less likely to raise their voices or demand change, since they are 'standard takers'. The size of the exporting firm will dictate the strategic options that the firm is likely to adopt. Larger enterprises that benefit from economies of scale may have greater scope to negotiate on standards. Economies of scale will likely lower compliance and administrative costs (Jaffee and Henson, 2004a, 2004b). However, most firms with limited capacity may prefer to remain loyal and comply with whatever required standards, operating at lower profit margins. The smaller firms with less labor, lower economies of scale, lower levels of investment and less integration are likely to adopt the compliant choice and the reactive/offensive or the reactive/defensive strategies.

There was not much difference between the offensive/reactive and the defensive/reactive firms surveyed in terms of characteristics. However, the small and medium-size enterprises differed in market share. International market share is important and influences the ability of firms to choose their methods of compliance (Henson and Jaffee, 2008; Neeliah and Neeliah, 2013). Those adopting proactive/offensive strategies are larger more integrated and make a larger contribution to the EU market share than the other firms, and hence are more likely to adopt more positive and advanced options. The proactive/offensive strategy is the best option, but firms must learn to operate within the realities of the industry and the economic sector (Neeliah and Neeliah, 2013).

6. Conclusion and policy recommendations

The study evaluates the strategies employed by the Vietnamese private sector to increase market share for pangasius in the EU and determine the factors that influence the sector's strategic decisions .Most exporting firms had limited voices, compliant and adopted reactive and defensive strategies to maintain market share. However, a few firms employ the proactive/offensive strategies. These firms adopting the proactive/offensive strategies are larger in terms of the number of persons employed; they command a larger EU market share; and have more years of experience in the processing business. The firms have the traits of being more vertically integrated than the ones adopting an offensive/reactive or reactive/defensive stance. Such firms are able to embrace the vision and direction of global food safety standards and thereby make considerable effort to up-grade their quality through hygiene and food safety control in order to meet such standards ahead of their competitors. The study provides and innovative approach of non-price strategies that firms can employ to improve market share in the pangasius export market. Policy makers can use these outcomes to enhance pangasius competitiveness in the EU white fish market.

Given the state of affairs in the Vietnamese pangasius industry, with falling market share, tighter profit margins and higher standards enforced, it is essential that the various firms cooperate to decide on a strategy that will benefit all. All firms must abide by the principle that unity is essential for survival. This is important, since there are competitors in neighboring countries or other white fish producers in the EU that want to gain market access and increase their EU market share. Therefore, the following recommendations are in order:

1. The firms must seek government assistance to bring firms together for collective rather than individual action. This may lead to the combination of those adopting offensive/proactive strategies in the private sector with a public voice speaking on behalf of a collective group.
2. Leaders in the industry should bring firms together to request joint certification, which is imperative for efficient marketing. Domestic changes will result in having more producers and processors certified with GlobalGAP and ASC.
3. Processors must be concerned with short-run safety and hygienic food standards and ensure that product refusals are minimized or eliminated. That means the processors must adopt more proactive/offensive strategies to improve hygienic standards and to minimize product refusals.
4. In the long-run firms should adopt strategies to ensure that standard enforcement enhances their competitive edge in the industry, through the fostering of economies of scale and scope in marketing.
5. The private sector should seize the initiative to educate the public on the importance of the pangasius industry to Vietnam's economy. The public sector should contribute to help firms adjust to the required standards, and be ready to establish joint representation with pangasius exporters.
6. At present, about 99% of pangasius sold are frozen fillets. The private sector should adopt a proactive and offensive stance and seize the opportunity to increase market share in the EU market by diversifying their products.

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