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## Article

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## Impact of value chain governance on the development of small scale shrimp farmers in Vietnam

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### Abstract

**Purpose** of this paper is to identify the tendency of shrimp value chain development and impact of its governance on the small scale shrimp farmers in Vietnam.

**Design/methodology/approach** - Data from the shrimp farmers surveys in Mekong delta, Vietnam from 2008-2010 with the update information in 2014 were taken to analyse by the value chain analysis method.

**Findings** - Traditional governance type of the shrimp value chain in the early state (before 2004) showed the different levels of coordination of farmers with collectors, among collectors, and collectors with processing plants. In this type of governance, trust and linkages are inextricably linked. However, they are not strong. The processing plants determine shrimp prices and quality requirement in the market while many collectors do not seem to be highly responsible for the quality of their products. To avoid this limitation, with the governmental support policy to improve farmers' income, the processing plants set up a direct buying from farmers under contracts. These contracts led to a new governance type with an expectation of improving farmers' position. However, this model was broken due to several reasons including un-controlled shrimp raw material from small scale and individual farmers. Consequently, processors now tend to establish their own raw material zone to comply shrimp quality assurance, and eject the existence of farmers. This will lead small scale farmers to very difficult problems in finding the market. Poverty and social problems of small scale farmers might appear.

The result recommends a greater strengthening and tightening of the value chain. Re-organizing shrimp farmers into legal teams or groups that help farmers to re-participate in the game with others actor in the chain is crucial.

**Research limitations/implications** - The research mainly follows inductive approach in which qualitative methods are dominant due to the difficulties of data collection for the quantitative analysis.

**Keywords:** value chain governance, shrimp farmers, Vietnam.

**JEL Classification:** Q19

### 1. Introduction

Shrimp is one of the most important export products of Vietnam in the recent years. In the world market, Vietnam ranks fourth in farm-raised shrimp production behind China, Thailand, and Indonesia (Tran, 2013). In Vietnam, black tiger shrimp dominates in small scale individual but commercially oriented farmers (Ho, 2012; Tran, 2013). In terms of value chain, shrimp chain in Vietnam is known as a very complicate structure where farmers are always in the weakest position compared to other actors such as collectors and processing plants. The relations of farmers with the rest of actors show the type of value chain governance and its movements from time to time since the development of shrimp sector.

This paper will discuss the impact of value chain governance on the development of farmers and propose suitable policies.

Though shrimps have many different species, this paper focuses only on black tiger shrimp (*P. monodon*), the major shrimp cultivated in Vietnam.

### 2. Black tiger shrimp value chain and shrimp farmers in Vietnam

#### 2.1 Shrimp value chain

The value chain includes primary and secondary actors. The main primary actors are considered as input suppliers (input dealers, hatcheries and nurseries), shrimp producers (farmers), collectors and processing plants. The main secondary actors comprise aquaculture Extension Services, Vietnam Association of Seafood Exporters and Producers (VASEP), Department of Agriculture and Rural Development (DARD), National Agro-Forestry-Fisheries Quality Assurance Department (NAFIQAD), banks, and research institutions.

Figure 1 shows the value chain of shrimp in the Mekong River Delta (MRD) where almost 90% of black tiger shrimp areas are situated in Vietnam.

The shrimp value chain in Vietnam starts from input suppliers namely input dealers and hatcheries to supply inputs to farmers such as post larvae, feed stuffs, chemicals, fuels, and net.

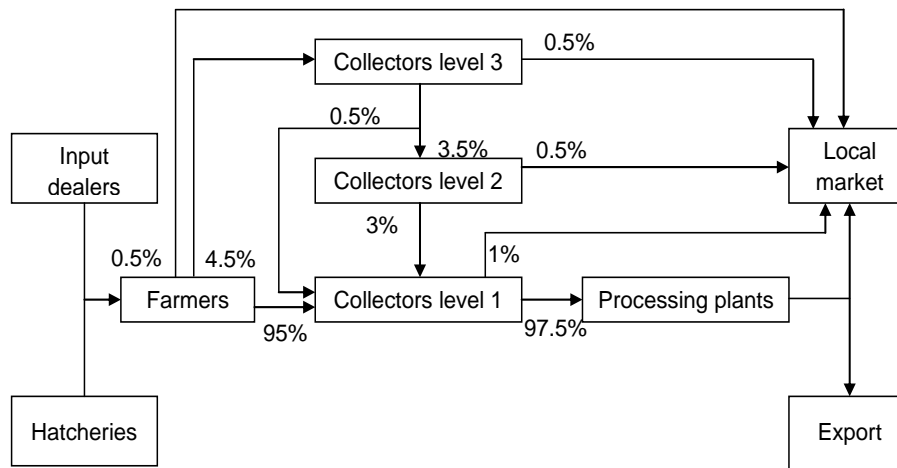
The main flow of shrimp raw material is from farmers to collectors at level 1 with about 95% of the total shrimp raw material production. These collectors will buy shrimp from other collectors at level two and three to supply the processing plants at a volume about

97.5%. Only one percent of shrimps of collectors level 1 was sold to the local markets.

Other flow of shrimp raw material from farmers to collectors level 3 accounts for about 4.5% of the total shrimp production. From collectors level 3, shrimp will be sold to collectors level 2 and 1, and local markets with the percentage of 3; 0.5; and 0.5 respectively.

Shrimps sold directly from farmers to the market were found in both extensive and semi-extensive cultivations of which the harvest volume is low. Some other cases of selling directly shrimp to the markets are failure farms when their shrimps are dead at the mid-season.

**Figure 1: Shrimp value chain in MRD Vietnam**



Flows of shrimp in the Figure 1 also show the actors who hold the main powers in the shrimp value chain, namely collectors level 1 and processing plants. These two actors are the leaders in the shrimp value chain where they play a key role to determine shrimp prices and have significant influences on other actors.

The above three flows of shrimps from farmers to markets illuminate the complicated value chain in general and its governance in particular where farmers always get impacts due to their lowest position in the value chain.

## 2.2 Shrimp farmers in Vietnam

Farmers are important actors in the shrimp value chain where they play their role as raw materials to the shrimp market. Farmers buy inputs from input dealers and post larvae at hatcheries or nurseries for their shrimp cultivation. At the end of the season, farmers will sell their output to collectors near their cultivated area.

Most of shrimp farmers in Vietnam are small individual scale and converted from rice producers. They apply primarily traditional and some modified practices such as extensive, improved-extensive, semi-intensive, and intensive cultivation.

The cultivation duration of shrimp in small farms is about 4-5.5 months depending on the climate and technical skill of farmers and market demand of shrimp size.

Most of shrimp farmers have low education, low financial capital, low technical skills, a lack of market

information, and low power of negotiation with other actors in the shrimp value chain. They stay at the weakest position in the shrimp value chain compared to other actors and therefore it is likely that they could get strong impacts, positively or negatively, from other actors in the value chain depending on the level of their governance and partners' behaviours.

## 3. Shrimp value chain governance in Vietnam

Value chain governance in the shrimp sector in Vietnam refers to the relationships among the primary and secondary actors namely input suppliers, farmers, collectors, processing plants and governmental institutions. Since the development of the shrimp sector in Vietnam in early 2000s, the value chain governance has been compounded by different types from traditional, as a market, to higher level management, as a hierarchy, which will be addressed below:

### 3.1 Traditional type of value chain governance in shrimp sector

Value chain governance in the shrimp sector in Vietnam refers to the relationships among the primary and secondary actors namely input suppliers, farmers, collectors, processing plants and governmental institutions. Since the development of the shrimp sector in Vietnam in early 2000s, the value chain governance has been compounded by different types from traditional, as a market, to higher level management, as a hierarchy, which will be addressed below:

**Figure 2: Traditional type of shrimp value chain governance in Vietnam**



At farmers' position, their back step suppliers are post-larvae suppliers, feed and chemicals providers. Their first forward customers are three level collectors and their second one is processing plant. Farmers coordinate with the suppliers as a buyer-seller relation where they can get inputs for their cultivation. In some cases, input suppliers play a role as an informal credit provider to farmers to whom they sell and from whom they are post-paid.

Farmers sell their outputs to collectors who are nearby their places. The shrimp farm gate prices are given by collectors based on the size of shrimps. The collectors' capabilities themselves are limited. They lack capital, quality awareness and equipment to inspect and maintain shrimp materials, and they have a too low education level to understand and apply quality knowledge. Particularly, they do not seem to be highly responsible for the quality of their products in relation to the quality of the final products traded in the world market, and have used chemicals and other substances to maintain shrimp materials before selling them to the processing plants (Vo, 2006). However, processing plants still need the existence of collectors because most of farmers are small scale farmers and practice the individual production form, so that they prefer to buy their raw material from collectors than from farmers. They do not want to hire many workers for this activity and spend a lot of money for transaction cost to buy directly from individual farmers.

In this type of governance, processing plants are the leader in the chain who almost decides the shrimp price in the market.

As mentioned above, the value chain governance refers to the relation among the actors in the chain, in other words this relation presents the linkage among them.

The traditional shrimp value chain in Vietnam shows that the linkage among actors in the shrimp value chain is not strong both in vertical and horizontal directions.

Both spot market and persistent network relations exist in the shrimp value chain. Spot market relations appear between input suppliers and farmers, and collectors and farmers. The main reasons of the existence of this linkage is the ensuring of farmers' input supply and output in order to have better prices. This linkage can change from time to time according to the volume of supplying products.

Linkages between farmers and input dealers as well as between farmers and collectors are not tight enough. The choice of farmers for their input suppliers is based on their financial capacity. Normally they keep the relation with input suppliers to buy material in case of financial limitation.

Linkage between farmers and collectors is the same as with input dealers. Farmers keep contact with

collectors in order to have better information. They can decide to sell their output to the collectors who give a better price. In this linkage, the farmers are free with their decision.

Linkage among collectors level 1, 2 and 3 remains as a network that was created on the basis of a long relation over years. Normally, collectors level 1 establish their own network to buy shrimp on the market. They are the ones who give information on prices and sizes to the collectors level 2 and 3. The linkage between collectors level 1 and 2 is quite strong when most of collectors level 2 sell their shrimp to the collectors level 1.

Linkages between collectors and processors in the shrimp value chain seem strong when the reality shows that most of collectors sell their shrimp to the same processors in the different crop seasons. Collectors usually sign a contract with processors to supply shrimp with an expected volume at market price.

In brief, the linkages in the shrimp value chain are not through all actors. However, among backward and forward actors, the linkages are maintaining at the spot and persistent network relations. Most of linkages are unofficial when actors only have oral agreements. The official linkage appears in the relation between collectors and processors, the two having the strongest power in the shrimp value chain. The current linkage in the shrimp value chain is not strong enough to apply the traceability system that is required by the importers. Therefore, the food safety standards seem not completely fulfilled.

### **3.2 Value chain governance under contract farming as a captive**

In the traditional form of value chain governance, the processing plants did not satisfy quality requirements of shrimp materials because, firstly, their plants are located far from sources of shrimp materials, and secondly, they are lacking the conditions to control quality of shrimp materials. The processing plants realised that quality of shrimp materials is a very important factor that affects to quality of final products. Therefore, the company's reputation in terms of business success and flexible price policies and quick payment are important elements that the processing plants have used to maintain the suppliers' loyalty. Besides, almost all processing plants are in a cut-throat competition of buying shrimp materials (93.8%) with internal and external processing plants of the region. As a result, uncontrolled shrimp materials are still distributed popularly (Vo, 2006).

In order to control the shrimp quality, processing plants looked forward to set up a direct buying from farmers under contract farming. With the support of Vietnam government, Ben Tre Forestry-Aquaculture Import Export Company (FAQUIMEX) established its relationship with farmers through contract farming.

With a mobilizing campaign based on voluntary participation, it created in three districts of Ben Tre province (Binh Dai, Ba Tri and Thanh Phu) a model of nine shrimp farmer groups who had production area of two to three hectares. These shrimp farmer groups established a linkage through annual farming contracts established. The provincial Agriculture and Rural Development Bank (AgriBank) participated in the linkage chain by providing capital loans through FAQUIMEX.

The main operating contract farming procedures were as follows: 1) Farmers: annual contract signing at floor price, selling product to FAQUIMEX at market price; free inputs purchase; after 75 days of shrimp production, farmers were supplied with funds provided that FAQUIMEX technicians assessed they complied with technical requirements; farmers were allowed to sell shrimps to parties offering a higher price than FAQUIMEX, but would have to pay back their loan to FAQUIMEX with the Bank interest rate; technical supports are provided by Aquaculture Extension Service throughout the shrimp crop season; product must be compliant with food safety requirements. 2) FAQUIMEX: establishing contract farming with farmers; as the legal entity to borrow fund from the bank; inspecting and monitoring the whole shrimp crop production; quantifying fund for farmers' loans.

FAQUIMEX wanted to establish a stable input network that guaranteed the raw shrimp food safety because it is a delicate export product that must comply with traceability and food safety requirement such as HACCP issued by the importing countries. Farmers participating in the contract wanted to have opportunities to increase their access to financial support advancement and confirm the product consumption market at the shrimp harvest crops. However, objectively, the main aim of both sides participating in the linkage model was to "maximize their profits". The processing plant maximized its profits through the reduction of transaction costs (decrease of collecting and negotiating expenses) due to stable input supplies. Participant farmers maximized their profits through a stable price at the end of shrimp crop season and gained an access to fund after 75 days of shrimp production.

The coordination among farmers and the processing plant, as FAQUIMEX, created a captive type of value chain governance (according to Gereffi et al., 2005) in Vietnam where the shrimp is codified, such as more specific products. In this type of value chain governance, both farmers and processing plants could reduce their transaction cost due to the limited number of buyers-sellers in the market where trust and commitment might be less risky. Hence, the shrimp value chain was upgraded.

### **3.3 New tendency of value chain governance**

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#### **4. Discussion**

According to Gereffi et al. (2005), the traditional type of shrimp value chain governance in Vietnam is a market linkage which does not have to be completely transitory as it is typical of spot market. Shrimp material for processing is not a product specification. Information exchanged among input suppliers, collectors and processing plants is relative low. Therefore, the transactions might be governed with little explicit coordination. Farmers respond to shrimp quality and prices that are set by collectors, directly, and by processing plants indirectly. Hence their bargaining power is low compared to collectors and processing plants.

In the captive type of value chain governance where farmers and processing plants signed a contract to sell-buy shrimp material at the end of season, trust and linkages are inextricably linked among them. The trust created among farmers and processing plants in the shrimp value chain would be better if there was a linkage in an organisation. However, the coordination through contract farming shows that farmers are transitionally dependent where the degree of monitoring and control is led by the processing plant.

The movement of shrimp value chain governance and its impact on farmers are shown in the Figure 3.

The shrimp value chain in Vietnam is very sensitive and complicated with the existence of many small, individual farmers; small and commercial-oriented collectors; processing plants and support institutions.

The movement of value chain governance in shrimp production develops new structures and shows its dynamism in Vietnam. However, the tendency of creating raw material zones of processors will lead small scale farmers to very difficult problems in finding the market for their output. Poverty and social problems of small scale farmers might appear.

The above study result recommends a greater strengthening and tightening of the value chain through improved organization, particularly among farmers. Re-organizing shrimp farmers into legal teams or groups that help farmers to re-participate in the game with other actors in the chain is very important. Further researches to find down better policies to improve farmers' situation are needed.

The Figure 3 shows that the number of farmers participating in the shrimp value chain reduces from the structure (1) to (3). In the traditional structure, as spot market chain governance, both small and large

scale farmers can join in the value chain to supply their shrimp to the processor through a link with collectors. In the structure (2), as captive value chain governance, only medium and large scale farmers could join in the value chain to supply their shrimp to processors through a farming contract. The structure (3), a hierarchy, excludes all farmers when processors cultivate and supply shrimp raw material by themselves.

The movement of shrimp value chain governance created the problems of poverty reduction and social aspect. In the structures (2) and (3) of the shrimp value chain governance, processors do not need the supply of small farmers who account about 80% of producers in Vietnam. Consequently, small farmers are faced to the challenges of finding a market for their outputs. On one hand, poverty might rise up due to the number of farmers being in debt because they cannot sell their output to the market when all the production costs are already spent. On the other hand, unemployment also increases due to the giving up of small farmers in shrimp production while there is no other job for them to join in. The same problem could happen with collectors when contract farming is established. The dark future of small farmers and other actors in the shrimp value chain seems very obvious.

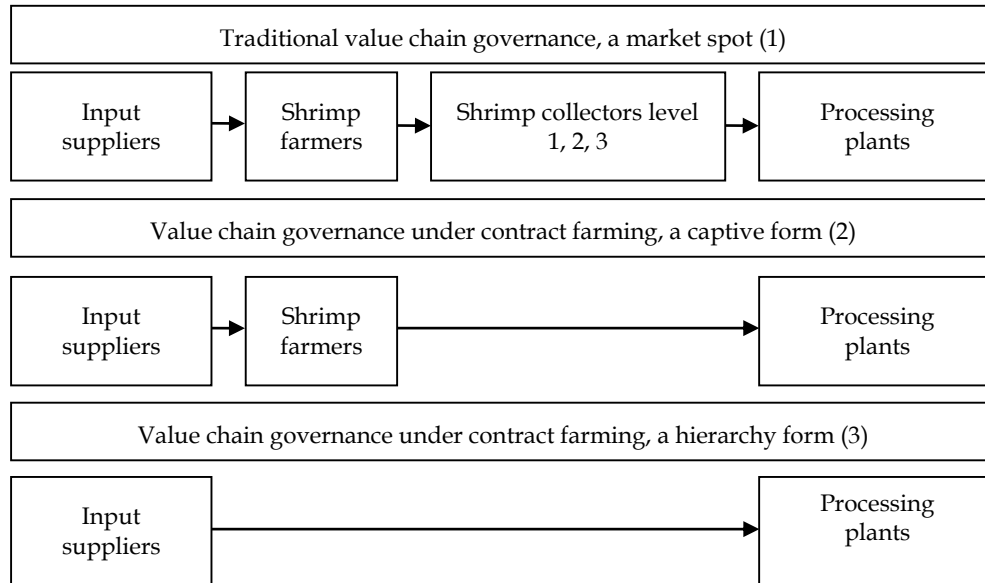
Generally, it is not all of small farmers who are excluded from the shrimp value chain. The traditional structure always exists and small farmers can sell their shrimp to processing plants through collectors. However, what is the market share of their shrimp when the customers' requirements of high quality in shrimp have been rising and their production status still remains? Due to the requirements of high shrimp quality from customers, the processors will have two options. They might remain or even expand their market if all requirements are met or they might lose their strict market and turn to the easier one. In the first option, processors need to create their own raw material zone to ensure the input quality or they might have a linkage with other actors.

The reality in Vietnam shows that there is a tendency in creating raw material zones of processors. If a processing plant does not have a closed production process from raw material to final products, it must depend on the raw material supplied by farmers or other sources and will not have the initiative to decide on the quantity of shrimp for export due to the excess or lack of inputs. Consequently, the production cost will increase, the prices of shrimps will be very fluctuant, and the competitiveness of processing plants will decline. If a processing plant had a production capacity about 300 tonnes/day but due to lack of raw material, can produce only 50 tonnes/day, its production cost will be tripled. In order to have production efficiency, at least 50% of the total input demand must be satisfied. Therefore, processing plants in Vietnam have a tendency to create their own raw shrimp material zone.

In the second option, processors will be lost and give their market to other competitors who meet customers' requirements. Demand for shrimp will be reduced. In both options, small farmers will have a limited market

if there is no change in their production techniques as well as organisational structure.

**Figure 3: The movement of shrimp value chain governance in Vietnam**



## 5. Conclusions

The shrimp value chain in Vietnam is very sensitive and complicated with the existence of many small, individual farmers; small and commercial-oriented collectors; processing plants and support institutions.

The movement of value chain governance in shrimp production develops new structures and shows its dynamism in Vietnam. However, the tendency of creating raw material zones of processors will lead small scale farmers to very difficult problems in finding the market for their output. Poverty and social problems of small scale farmers might appear.

The above study result recommends a greater strengthening and tightening of the value chain through improved organization, particularly among farmers. Re-organizing shrimp farmers into legal teams or groups that help farmers to re-participate in the game with other actors in the chain is very important. Further researches to find down better policies to improve farmers' situation are needed.

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