DITRIBUTION CHANNEL OF EXPORTED WHITELEG SHRIMP IN KHANH HOA PROVINCE, VIETNAM

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ABSTRACT

The study evaluates the distribution channel of whiteleg shrimp in Khanh Hoa province, Vietnam by systematic mapping the value chain and the status of producers and stakeholders. A survey of 100 limted resource farmers, 10 middlemen and 2 exporters using convenient sampling and face to face interview method in 2014 and 2015 reveal that males account for 98 percent of limited resource farm owners. Most of the shrimp producers are small size independent producers. The marketing channel involves two groups of middlemen (middlemen type #1 and middlemen type # 2) that exert enormous power in the marketing process. The distribution of shrimp materials by middlemen type #1 is based on shrimp size. If the size is within the range of 70 to 120 shrimps/kilogram, the middlemen type #1 distribute all to middlemen type #2 (18.9%); if the size is in the range of 120-to-200 shrimps per kilogram, they distribute to large restaurants and supermarkets (22.6%); if the size is above 160 shrimps per kilogram, retailers are allocated 58.5%. Middlemen, type #2, possess the capital to supply middlemen type # 1 to cover operational expenses and to pay small farmers before harvest. The capital endowment of middlemen type #2 dictates the buying power and their guaranteed returns on investment. To improve participation of limited resource farmers it is important to encourage horizontal integration among them, and vertical integration and coordination among the market participants, processors and exporters. It is of utmost importance to seek government intervention to build the image of Vietnam seafood in international markets.

Key words: Whiteleg, shrimp, value, chain, integration, Vietnam

INTRODUCTION

Whiteleg shrimp production and marketing contribute significantly to the economies of Vietnam and Khanh Hoa Province. Since 2010, Vietnam has earned about two billion dollars annually through shrimp exports (van Duijin et al. 2012). Khanh Hoa province is the cradle of the shrimp farming movement in Vietnam and is a well-known center for shrimp hatcheries in the country (Lan 2013). In 2014, 44 enterprises from Khan Hoa province processed and exported seafood to three major markets: 40 per cent to USA,

20 per cent to Japan, 15 per cent to the EU, and 25 percent to other markets. Of all exported marine products in 2014, shrimp accounted for slightly more than 56 per cent, tuna with approximately 28 per cent, and mollusc 16 percent (Statistics Office of Khanh Hoa Province, 2010 and 2014).

A large number of fragmented, small-scale operators engage in the production of whiteleg shrimps in Vietnam, render quality control difficult. These operators are not integrated and hardly have any voice in the processing and exportation of shrimps. Added to this is unplanned and unstructured shrimp production area growth that results in polluted environment, decline in larvae (seed) quality, dangers of food safety due to chemical and antibiotic drug misuse, the increasingly high intensity of complex shrimp-disease epidemics, strict food safety requirements and traceability by importing countries (van Duijin et al. 2012). The above problems that plague the industry impose major constraints on the efficiency of the marketing channel value chain. This study uses the value-chain approach to evaluate the present development and efficiency of Khanh Hoa white-leg shrimp export industry based on vertical integration and coordination.

THEORETICAL APPROACH

Theoretical approach

Among recent research on Vietnam commodity value chain, a number of studies have been conducted on value chain analyses in selected provinces including Hung Yen (Long et al. 2011), Quang Nam (Dien et al. 2010), An Giang (Kiem et al. 2010) and Dak Lak (GTZ 2006). All of these studies used similar methods as the GTZ that are borne from the research undertaken by Kaplinsky and Morris (2001). Becker et al. (2009) who summarized the research findings of the value chain of Vietnam argicultural products suggested that there is a need for greater coordination among stakeholders. Tran et al. (2013) used global value shrimp farming industry chain (GVC) theory to understand governance of Vietnam's shrimp farm traders' operation. Vertical integration allows products and services to integrate forward and backwards of operation procedures towards the sources of raw materials as well as delivery and distribution networks (Glenn et al. 2000; Dawson 2003 and Lee et al. 2011). The efficient operation of the channel requires joint ownership and participation by farmers in the value chain and some contractual agreement among the actors at the various integrated stages (Kotler and Armstrong (1994);and Berman (1996)). It is important to investigate whether one can improve efficiency with greater attention placed on

strategic arrangements of vertical and horizontal integration and coordination.

This study employs: *(1) systematic mapping and (2) definition of the benefit distribution among stakeholders in the chain to evaluate the status of whiteleg, shrimp market participants in Khanh Hoa Province* and the relationship of these stakeholders in the chain. On this basis, the author proposes the use of the vertical and horizontal integration and cooperation model approach.

RESEARCH METHOD

We selected 113 representative sample farmers in Ninh Hoa District, mainly located in Ninh Giang, Ninh Phu and Ninh Loc Communes where the largest white-leg shrimp production area is located. The researchers used secondary data from the Khanh Hoa Province Department of Agriculture, 2010 to 2014, and a survey instrument to evaluate the current condition of whiteleg shrimp stakeholders, mapped the value chain diagram, calculated revenue, costs, and value addition at various stages of the chain at the end of the harvest in November 2014 and 2015. The sample included a group of 100 small-scale farmers, 10 middlemen and 3 exporters.

RESULTS

Socio-demographic Charateristics

The result shows that male accounts for 98 percent of the owners of limited resource farms. The 31 to 50-year old group makes up the majority of the farmers (87%), whilst above 50-year old and below 30-year old are responsible for 10 and 3%, respectively. The years of farming experience is about 2 to 6 years. About 6% of farmers had less than 2 years, and 9% more than 6 years of experience. The majority of farmers completed secondary school (54%); whereas, 33% of these finished primary school, and the remaining 13% completed high school.

Farm size and farming system

Whiteleg shrimp are produced in Khanh Hoa Province using intensive, semi-intensive and improved extensive farming methods by 16%, 57% and 27% of farms, respectively. The majority of whiteleg shrimp production ponds average less than 10,000 square meters. The highest (62%) accounts for 3000 to 7000 square-meter ponds; 28% of these account for below 3000-square-meters and the rest is 7000 square-meter ponds. In terms of the small-farm performance, 3000 to 7000 square-meter growing ponds perform best for caring and tracking of growth and disease problems. Intensive shrimp farming also

employs high stocking density, but with aeration system. Table 1 shows area and production data for 2012 to 2014.

The table shows that area produced decreased from 2012 to 2013 but increased in 2014. However, the output decreased from 2012 to 2014. This means that yield has declined throughout. In recent years, factors such as epidemics, unfavorable weather conditions and environmental pollution were noted as the main cause of reduced whiteleg shrimp production and yield variation in Khanh Hoa Province.

Table 1: Production area and output of whiteleg shrimp in Khanh Hoa Province, 2012-2014

	Production area (ha) by district					Total	
Year	Van Ninh	Ninh Hoa	Nha Trang	Cam Lam	Cam Ranh	Procution area (ha)	Production output (tons)
2012	118	1,226	96	142	578	2,160	10,788
2013	50	809	48.5	35	97	1,039.5	8,850
2014	231	1,671	56	312	455	2,725	7,912

Source: Department of Agriculture and Rural Development of Khanh Hoa Province (2012, 2013 & 2014)

Seed quality and intensity

The choice of stocking material depends on farm size and capital availability. At the beginning of each season, 66% of famers obtained their larvae from unidentified sellers originating from various nursery grounds, whereas only 34% of small farms source from recognized, prestigious companies in Binh Thuan and Ninh Thuan Provinces. Unrecognized sources of shrimp larvae are cheaper (17-to-34 VND/shrimp U.S. ($0.0007 to $0.00014) compared to those from recognized companies 60-to-82 VND/shrimp) U.S. ($0.0027 to $0.0037). Small farms that are risk averse and stock at low densities (below-60-larvae per meter) usually prefer non-recognized stocking sources because of lower prices. In contrast, small farms that seek large profit margins are accompanied by high risks stock at high densities and often choose prestigious suppliers of shrimp larvae.

Most small farms that purchase stocking material from unidentified sources do not check quality as stipulated in the regulations. Small farms choose stocking materials in their farming area based on their own experiences, and sensory norms (body color, intestine color, features and homogeneousness of breeds).

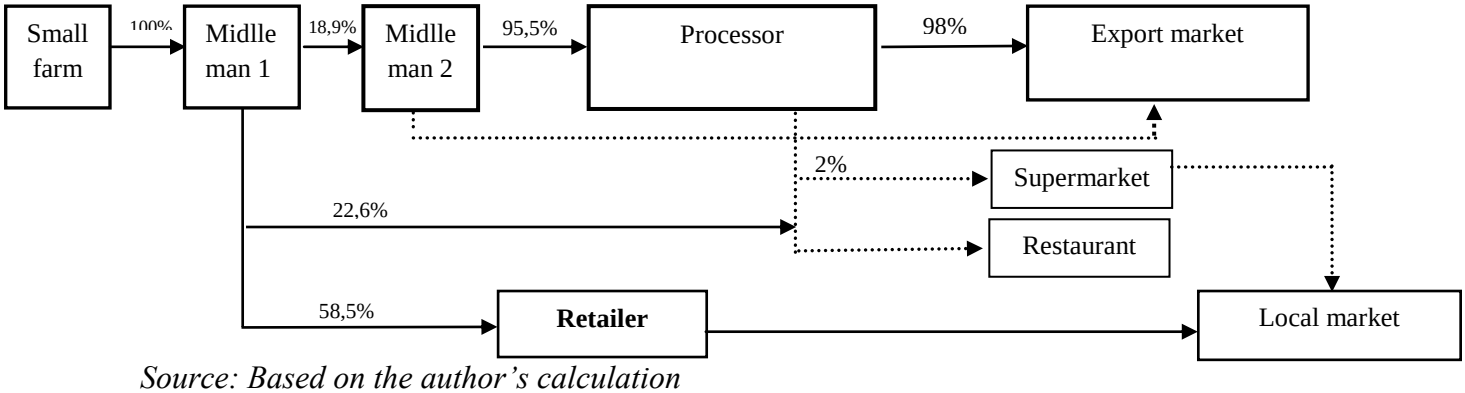
The value chain of Khanh Hoa whiteleg shrimp

Figure 1 describes the value chain of Khanh Hoa Province whiteleg shrimp production and marketing. First, the majority of farms engaged in finished shrimp product exports are small-size independent farms. Second, there is an involvement of middlemen in the shrimp value chain (middlemen 1 and middlemen 2). Third, the largest amount of finished shrimp products is sold to middlemen. Finally, traceability poses a problem since the number of suppliers are small-scale farmers.

Middlemen 1

During harvest seasons, all small farms make contact with middlemen 1 to market their shrimp at the pond banks. Middlemen must provide their business license and show evidence of the product origin. Middlemen 1 contribute a valuable service to farmers at the local level in terms of collection of shrimps and assembly of producers. Middlemen 1 pricing and buying decisions are based on shrimp size. If the size is from 70 to 120 shrimps/kilogram, middlemen 1 distribute all to middlemen 2 (18.9%); if the size is in the range of 120-to-200 shrimps per kilogram, they distribute to restaurants and supermarkets (22.6%); if the size is above-160-shrimps per kilogram, they are distributed to retailers (58.5%) which is also the main distribution channel for middlemen 1.

Diagram 1: The value chain of Khanh Hoa whiteleg shrimp



Source: Based on the author's calculation

At present, trading arrangement between small farms and middlemen is mainly verbal, without any written formal contractual agreement. This could be a source of contention for both sides.

Middlemen 2

Middlemen 2 are those possessing large capital resources and are able to offer advances to middlemen 1 who then deposit certain amounts to the accounts of the limited resource farmers, or pay for the shrimps in advance of harvest. Middlemen 2 also has a link to processors. The profits gained by more capital endowed middlemen 2 are dependent on their ability to purchase higher quality guaranted products to supply to processors.

Communication between the middlemen is quick and efficient. Middlemen mainly communicate via phone. Once middlemen 1 notice the quality and time of harvest of a farm, a deposit is requested from middlemen 2 and contact is made with processors. After negotiating with processors, middlemen 2 transfer money straight away to middlemen 1 and request a margin of 500VND or ($0.22) per kilogram of raw shrimp above processor price. Most middlemen 2 carefully select processors with whom they trade. Processors also want to build the network with certain middlemen even though there is no written business contract made between the two parties. In fact, good relationship is always maintained between middlemen and processors.

Processors

There are currently 6 shrimp-processing-and-exporting firms in Khanh Hoa province. The exclusive interview with 2 quality controllers from Nha Trang Seafoods Joint-stock company - F115 and F17, disclosed that the firms are in contact with their middlemen partners to select base materials which match their manufacturing needs in terms of quality, sizes and prices. The raw materials are shipped to the exporting firms for quality evaluation. Those that fail to meet the sensory evluation are returned to suppliers.

Whiteleg shrimp are processed by firms following certain quality standards: Hazard Analysis and Critical Point Control (HACCP), Good Manufacturing Practices (GMP), International Organization of Standardization (ISO) 9001:2001, British Retail Council (BRC), Aquaculture Certification Council (ACC), International Feature Standard (IFS), Best Aquaculture Practices (BAP). This is a challenging task for the firms to check the origin of goods (breed, food, animal drugs). Since most small-scale farms produce shrimp on their limited areas, they encounter difficulties following standardized-production processes of GAP, BMP, and VietGAP.

DISCUSSION, RECOMMENDATIONS AND POLICY DIRECTIVES

Discussion

The value chain of whiteleg shrimp exports in Khanh Hoa Province is semi-controlled by exporters. Based on the findings of the previous studies (Joffre and Bosma (2009); Ho (2012); Ha (2010); Anrooy and Nguyen (2004); Kotler and Armstrong (1994); and Berman (1996), the value chain in Khanh Hoa province defies all the rules that govern the smooth and efficient operation of a value chain and distribution channel. The market participants in the value chain in Khanh Hoa province include a large number of fragmented small-scale shrimp farmers that independently supply shrimps of varying quality and standards to middlemen. There is no unified vertical integration stage of the distribution channel; there is a lack of joint ownership and an absence of contractual agreement between market participants; yet the chain continues to fuction to some degree. The exporters dictate the price and quality. Small farms are price takers and bear market as well as environmental (weather), biophysical (quality and stocking material variability), production (health), market (prices, demand and supply), and institutional (regulatory) risks. The producers are fragmented and do not speak with one voice (Tran 2013). They then operate at the mercy of the middlemen and accept their offers without collective bargaining.

The relationship among participants in the market chain is based on loyalty and goodwill. This does not always work since farmers sometimes sell to middlemen with the money and who offers a higher price. The distribution of benefits is uneven among the stakeholders.

Encouraging small farms to follow VietGAP standards for their products

VietGAP (Vietnamese Good Aquaculture Practices) are sound practices for seafood production in Vietnam to ascertain food hygiene and safety standards, limit epidemic spread of diseases, reduce pollution, assure social responsibility, and source verification.The implementation of VietGAP is expected to raise consumers' faith in safe clean products. The problem of limited sized farms may in some cases hinder the efficient adoption of all recommended practices.

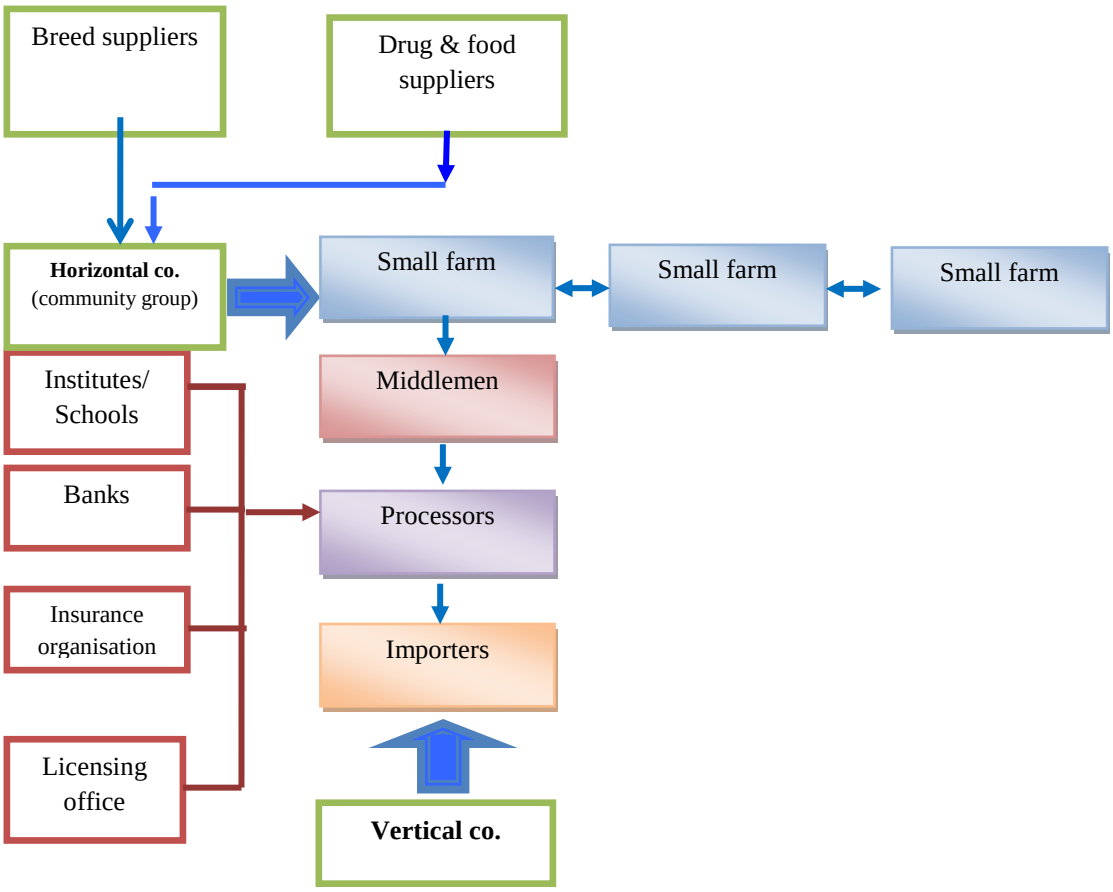
Recommendations and policy directives

As a long-term solution one major recommendation is the industry must reorganize into a unit as seen in figure 2 to allow the efficient association of vaue chain participants and to give a competitive edge to value chain operators.

Organization through horizontal integration

Horizontal integration is the coperation among individuals who work in the same stage or among the same type of stakeholders (among small farms or among enterprises, for example). Prime development of horizontal integration helps to enhance and nourish the success of vertical cooperation and vice versa. Small scale farmers must unify and act as a collective group and accordingly, will have greater control throughout the marketing chain.

Figure 2: A cooperation model in the value chain of white-leg shrimp



Source: The author's proposal

Horizontal integration will encourage all small farmers to form producer groups in their local areas. Such producer groups will ensure the observance of regulations that enforce the use of waste sludge systems, medicine usage, seafood epidemic prevention, and the determination of price of each size of shrimp after harvest (so as to reduce the probability of cut-priced goods). Such horizontal move will facilitate a more solid vertical functioning and will enable limited resource farmers to benefit from the various stages (processing as well as input provision) of vertical integration.

Vertical cooperation is collaboration among stakeholders from the input phase to the output phase. In fact, the cooperation among stakeholders is the prime concept of the value chain and market connection:

Cooperation among chain stakeholders: Processors, producer groups, service suppliers (foods, breeds, drugs...), banks, insurance companies, and 'certifying' boards should cooperate and encourage vertical linkages among producers, processors and input suppliers. The cooperation between processors and middlemen can be built through contracts. Based on such contracts, shrimp purchasing cost is kept stable at every stage and might be adjusted during market fluctuation, which will be beneficial to all three sides: producer groups, middlemen and processors. Companies may commit to maintain prices that will allow variable margins during the purchasing period adopted by middlemen. If the market price increases, companies might adjust prices to ensure that a sufficient amount of returns go to small farmers to keep them afloat; small farmers are, therefore, guaranteed not to sell at forced-prices and companies can accordingly buy sufficient quality material to meet high demand.

The proper functioning of the value chain and distribution channel both at the processor and input provider levels requires the participation of farmers. The farmers should become part owners by the purchase of shares in input market and the processing industry. This will allow them to be integrated at the various stages of the business and have more say in the operation of the various enterprises. As farmers share in the benefits of the business they will become more responsive to the adoption of practices that will build the reputation of the Vietnamese shrimp industry internationally.

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