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Short Communication

Roles of Men and Women in Sergestid Shrimp (*Acetes* spp.) Value Chain in Oton and Tigbauan, Iloilo Province, Philippines

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Abstract

This paper describes the roles of men and women in the sergestid shrimp (*Acetes* spp.) value chain to provide a better view of the industry in Oton and Tigbauan, Iloilo, Philippines. The qualitative and quantitative data used came from interviews of 16 women and 21 men that comprise 46 % of the total number of 80 main players in the study sites. These were supplemented by key informant interviews and a focus group discussion. Results show that if the value chain is examined, the sergestid shrimp industry turns out to be a sphere of both women and men. While certain activities are more commonly undertaken by men, others are dominated by women. Although few women were involved in the capture segment, more women were in the processing and trading segments. Women and men both contribute to the sergestid shrimp industry and play important roles in addressing poverty and food security issues in the area.

Introduction

The Philippines, an archipelago of 7,641 islands, has a land area of 343,448 km^2 and vast territorial waters of about 2.2 m. Fisheries is an important sector that provides food, livelihood, and income to more than 100 million population, half of which resides in the coastal areas. The country has been one

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of the top fish producers in the world. In 2013, the country's production of 4.7 million metric tonnes constituted 2.46 % of the total world production and ranked the country 7th among the top fish producing countries in the world (Bureau of Fisheries and Aquatic Resources, 2014). In 2014, the fishing industry contributed 19.6 % of the total Gross Value Added (GVA) in agriculture and 1.8 % in the total Gross Domestic Product (Philippine Statistics Authority 2015).

In particular, the catching of wild small shrimp or sergestid shrimp (*Acetes* spp.) is an important local industry in the coastal municipalities of Oton and Tigbauan in southern Iloilo, Philippines. Sergestid shrimp (locally known as 'hipon') occur in abundance in the territorial waters of these municipalities in the months of December to May. The sergestid shrimps are small (with a maximum size of 30 mm), planktonic, nearly transparent shrimps that swim in enormous numbers in the water column (Dore and Frimodt 1987). Most of the catch are processed into either sun-dried shrimps (locally called "kalkag"), shrimp paste (locally called "ginamos") or mixed with juvenile fishes to be salted and fermented into "tinabal" (Bagarinao 2008). These products are sold locally or shipped to big cities of Cebu and Manila, and abroad.

The commercial exploitation of sergestid shrimp in the area started in 1950s and it has thrived through the years. It has been an important source of livelihood in the coastal barangays of Tigbauan and Oton, particularly to shrimp catching operators and the crew, the processors, and the traders. Shrimp catching was found to be highly profitable either using filter nets (locally called "saluran", "saludan", or "tangab") or skimming or push nets (locally called "sungkit") (Ferrer et al. 2004). Bagarinao (2008) estimated that more than 500 coastal households in Tigbauan were dependent on this industry. No current official record is available on how many households are dependent on this industry but local fishery managers estimated that more than half of the population in the 3 coastal barangays in Tigbauan are currently dependent on this industry for food, income, and livelihood.

The local shrimp industry is under threat by declining catch caused by a number of factors from overfishing to climate change, which has implications for the livelihood and food security of households dependent on the resource. In Oton, the recorded catch was 246.92 metric tonnes of sergestid shrimps during

the years 2009 to 2010 and 131.76 metric tonnes during the years 2010 to 2011 (Burgos 2011). These catch volumes had an estimated value of P 5.7 million and P 3.3 million, respectively. In Tigbauan, the total catch of sergestid shrimps recorded in 2010 was 90.13 metric tons (estimated value of P 2.07 million), in 2011 was 81.85 metric tonnes (estimated value of P 1.9 million), and in 2012 was 79.55 metric tonnes (estimated value of P 1.91 million) (Tigbauan Municipal Agricultural Office 2013).

Available studies on sergestid shrimp in the study sites were on fishing gear that catches this shrimp (Bagarinao 2008; Monteclaro and Abunal 2014), profitability of the shrimp catching (Ferrer et al. 2004), training on processing (Baylon 2007), and on governance and management (Burgos 2011; Espectato et al. 2012). This paper focused on the roles and responsibilites of the men and women in the local shrimp industry of Oton and Tigbauan. An attempt was made to show the number, roles, and responsibilities of men and women in the value chain of sergestid shrimp catching, trading, and processing. Gender lens and value chain approaches were chosen to see how the roles changed in each segment of the chain to provide a better view of this local industry (Williams 2008). The main purpose was to have a good understanding of the issues in the local shrimp industry and to contribute information in the design and selection of a responsive and appropriate action such as the development of gender sensitive local policies and planning that can help both men and women in the sergestid shrimp industry.

Methodology

The data for this paper came from a bigger study on value chain analysis of sergestid shrimp in the adjacent municipalities of Oton and Tigbauan (Fig. 1). It involved both qualitative and quantitative data. Data were collected through personal interviews of 37 players in the industry (46 % out of 80 identified players) using pilot-tested interview schedules. These included interviews of 14 shrimp catching operators (12 men and 2 women) (33 % of the 42 shrimp catching operators in the area); 2 commission men (out of 3 commission men operating in the area), 9 raw shrimp traders (8 women and 1 man; 39 % out of 23 raw shrimp traders in the area) and all of the 11 shrimp processors (6 men and 5 women). Interviews of 4 fisheries managers (all men) and a focus group discussion (FGD) with 8 residents (5 women and 3 men) who

were long time shrimp catchers, processors, and traders supplemented the interview data. The interviews were conducted in January to March 2014, while the FGD was conducted in May 2016.

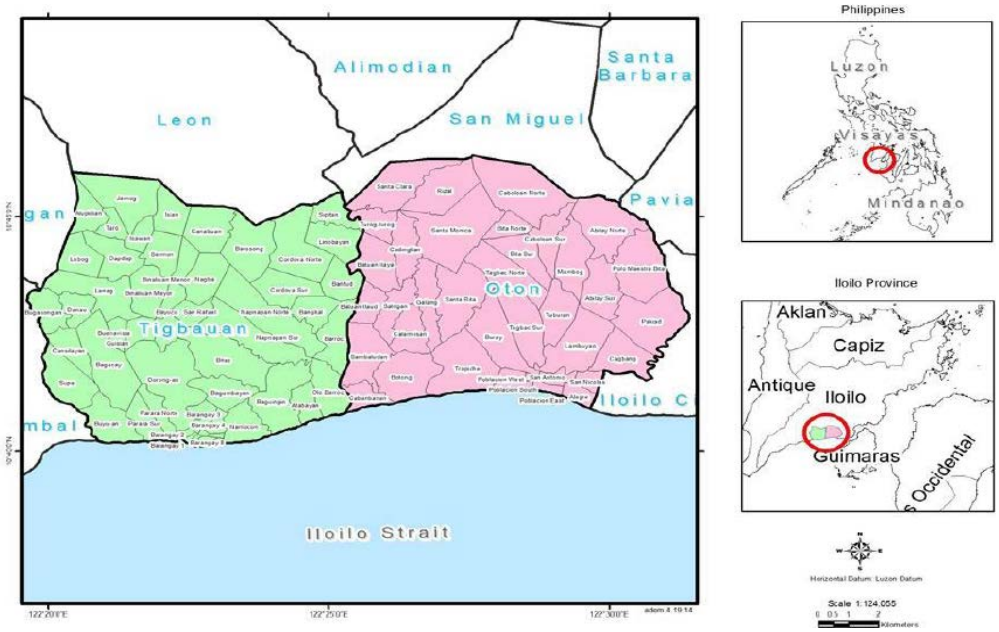

Fig. 1. The study sites: Municipalities of Oton and Tigbauan, Iloilo, Philippines

Results

The Sergestid Shrimp Value Chain

The shrimp undergoes transformations and changes in value as it moves from catching to processing or trading until the final consumer is reached. A number of players were involved in these shrimp value chain in Oton and Tigbauan (Fig. 2).

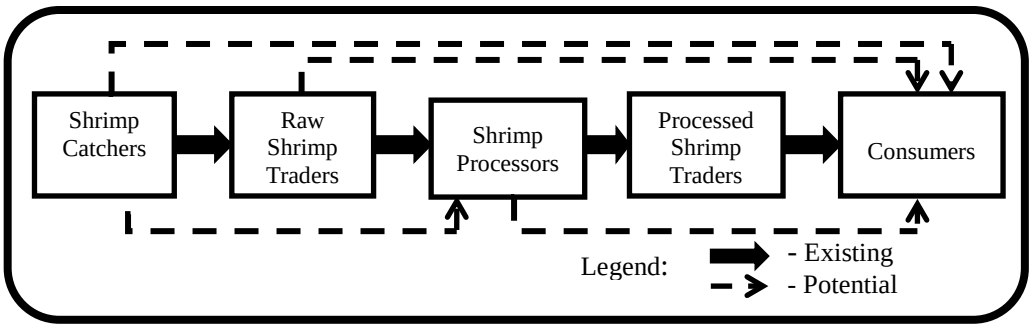

Fig. 2. The players in the value chain of sergisted shrimp in Oton and Tigbauan.

They were the shrimp catchers, the fresh or raw shrimp traders, the processors, and the processed shrimp traders. Table 1 shows the 37 study participants interviewed and the main role they played in the shrimp value chain. An individual, however, had several roles played such as a catcher and processor, or catcher and trader, or processor-trader.

Table 1. Number of players, the study participants and their hired workers

	Shrimp catching operators	Commission persons	Raw Shrimp Traders	Shrimp Product Trader	Shrimp Processors/ traders	All
All players*	42	3	23	1	11	80
All study participants	14	2	9	1	11	37
Women	2	0	8	1	5	16
Workers**	98	16	10	3	53	183
Women	3 (3 %)	11 (42 %)			16 (29 %)	30 (16 %)

*based on the list provided by the local fisheries managers. During the period of field data collection, a number were not available, while others have temporarily stopped operation. **hired workers of the study participants

Shrimp Catching

The two main gears in shrimp catching were the filter bag net (saludan/tangab) and the motor-operated skimming net (sungkit). The filter bag nets were stationary nets, which were set or moved against the currents in order to catch shrimp while the skimming nets were active fishing gears composed of a big triangular net and a motor-driven boat designed to catch shrimp. “Sungkit” operation depended on the weather while “saludan” operation depended on the tide of the waters.

Shrimp catching operation mostly involved men and a few women. The 14 shrimp catching operators (12 men, 2 women) in the study were the owners of the fishing vessels, gears, and other capital investments. They provided operation inputs but did not participate in the actual shrimp catching operation.

The 14 shrimp catching operators had 98 workers, where 3 were women who worked as crew members (locally called “boso”) (Table 2). These 3 women aged 19, 20, and 46 years old were all paid family members. The rest

were men, aged between 18-63, who were the boat captain (maestro), machinist, crew members (boso), and helpers (non-regular worker, locally called "bayog"). The payment to labor was a share after deducting operation cost (rental fee, storage fee, landing fee, handling fee, and fuel costs) and commission fees from sale. Men and women in the same position in the fishing crew received the same payment. The operators received weekly financial records from the commission men. Thus, the crew received payment on a weekly basis, at the minimum.

According to the study participants, men were preferred because shrimp catching requires strong muscle power, endurance and stamina in setting up and pulling up nets, loading and unloading shrimp in strainers or boxes, lifting and carrying heavy boxes, and repairing machines and nets. During the FGD and key informant interviews, however, it was emphasized, that the women, usually the operator or crew member's wife or daughter, were helping in net repair and in preparing the food and other provisions for the crew when they went out to catch shrimps. According to the catchers, the women were their source of strength, giving them support and "cheering" them in their work.

Table 2. Tasks Performed by Hired Men and Women in Shrimp Catching

	N = 98			
	Men		Women	
Tasks	*n* = 95	%	*n* = 3	%
Pulling the nets	89	93.68	1	33.33
Storing	81	85.26	3	100.00
Sorting	70	73.68	3	100.00
Unloading	52	54.74	1	33.33
Carrying	42	44.21	0	0. 00
Setting up nets	27	28.42	0	0. 00
Loading	32	33.68	0	0. 00
Sewing nets	28	29.47	0	0. 00
Looking for shrimp	25	26.32	0	0. 00
Repairing machines	20	21.05	1	33.33
Rowing the boat	14	14.74	0	0. 00
Assist in Selling	8	8.42	0	0. 00
Driving	2	2.11	0	0. 00

*Based on interview with 14 shrimp catching operators

Shrimp Trading

The shrimp traders were two commission men (locally called "komisyonista", they acted as the marketing agent of the shrimp catching operators), and 9 raw shrimp traders. 8 traders were women. According to the

key informants and FGD participants, the commission houses were named after the husbands. However, running the commission house was a family business where the wife and the children are helping. They added that most raw shrimp traders were women and their number increased with the opening of the commission houses in the middle of the 2000s. The women-traders purchased shrimp for selling in nearby barangays and municipalities (i.e., retailers). Others delivered the shrimp to restaurants and food establishments in the city, about 20 km away (i.e., wholesalers selling to institutional buyers).

Most of the catch were landed in the commission houses; two commission houses in Tigbauan while one in Oton. If the catch in Oton waters was less than 5 boxes (with capacity of 48 kg), then the catchers brought the catch to the commission house located near the boundary between the 2 municipalities. The commission men as marketing agents for the catch received a certain percentage (3 % to 5 %) of the sales in exchange for their labor. Both men and women were seen in the commission houses as early as two in the morning, waiting for the shrimp to be brought in by the catchers. Trading usually started as soon as boxes of fresh shrimps arrived.

The 2 commission men and 9 raw shrimp traders identified 26 workers, where 15 were men and 11 were women (Table 3). The 11 women were aged 15 to 53 years old and 3 were unpaid family labor. The 15 men aged 17 to 58 years and 3 were also unpaid family labor.

The men were involved in more activities than the women. The men were carrying or moving boxes of shrimps, loading and unloading shrimps in boxes, cleaning boxes or the selling area, selling or buying shrimps, record keeping, negotiating with price with the buyers/sellers, and driving.

Only 3 tasks were identified for the women: carrying or moving boxes of shrimps, selling or buying shrimps, and record keeping. The 2 women identified doing record keeping were workers in the commission houses. These women were in-charged of listing purchases and sales, other record keeping tasks, and receiving payments. The men in commission houses were in-charged of receiving the boxes, negotiating with the buyers and in releasing the shrimps to buyers. According to a key informant, the involvement of women in trading at the commission houses started only when the two commission houses became

operational in the second half of 2000s. The men were preferred as hired help because the work involves the lifting of heavy boxes of shrimp.

Table 3. Tasks Performed by Hired Men and Women of the Commission Men and Raw Shrimp Traders

Tasks	Men n = 15	Women n = 11	All N=26
Carrying/moving boxes of shrimp	9	6	15
Loading shrimp	9	0	9
Cleaning boxes/area	9	0	9
Unloading shrimp	8	0	8
Assist in selling/purchasing	6	8	14
Listing/Record keeping (office)	4	2	6
Negotiating Price	4	0	4
Driving	2	0	2

*based on interview with 2 Commission Men and 9 Raw Shrimp Traders.

Shrimp Processing

Shrimps were transformed into shrimp paste (*guinam*os), dried shrimp (*kalkag*), and shrimp crackers. These products were then sold in various markets and even exported outside the country. The processors were visited by buyers from outside of the area who placed their orders. The shrimp products were promoted under the One Town, One Product (OTOP) program of the municipality, which boosted its sales.

Table 4. Tasks Performed by Hired Men and Women in Shrimp Processing

	N = 56			
	Men		Women	
Tasks	n = 40	%	n = 16	%
Mixing	27	67.50	5	31.25
Drying	25	62.50	9	56.25
Salting	22	55.00	6	37.50
Pounding	21	52.50	5	31.25
Tasting	15	37.50	7	43.75
Purchasing	9	22.50	6	37.50
"*Linas*" (crushing and mixing the shrimp using the feet)	9	22.50	0	0.00
Others	8	20.00	1	6.25
Delivery	7	17.50	6	37.50
Selling	3	7.50	7	43.75
Buying the ingredients	3	7.50	9	56.25
Carrying	2	5.00	1	6.25

*Based on interview with the 11 shrimp processors

Processing involved both men and women. Out of the 11 processors interviewed, five were women. They had 56 hired help composed of 16 women and 40 men (Table 4). The women workers were aged 16 to 66 years old, including paid and unpaid family members. More men (aged 20 to 71 years old) were hired to perform the more strenuous work involved in shrimp processing. Men and women received the same pay for the same work.

In making shrimp paste, more men were hired to dry, pound, mix, put salt, store, and transport the shrimp product. The pounding and mixing were described as a very tiresome process requiring leg muscle power as the shrimps were crushed and mixed by the feet. There were different kinds of shrimp paste such as "binisya", "pintal", "semi-pintal", "tinabal", and cooked in different flavors like sweet, sweet and spicy, and hot and spicy. The women dominated the cooking of shrimp paste and the purchasing of ingredients and other materials used in processing.

Meanwhile, most of the activities involved in dried shrimp making involved the men and women. The women were more involved in arranging and sorting the shrimps on the drying platforms and in monitoring them during the drying period. The men were involved in carrying the boxes of fresh shrimp to the drying area and in storing them.

Only women made shrimp crackers. In making shrimp crackers, dried shrimp were blended with flour, flattened, and shaped. According to the study participants, their shrimp crackers were not "perfect" but were already sold in the tourism office of Tigbauan.

The skills in shrimp processing were acquired through experience and formal training. In the 1980s, a training in shrimp paste making had 7 participants only: 5 women and 2 men. The training on shrimp cracking making in 2012 and 2015 were attended only by women.

Discussion

Beginning in the 1950s, the sergestid shrimp industry in Oton and Tigbauan has become an important source of food, livelihood, and income for a number of people including the shrimp catching operators and their crew,

traders and their workers, and the processors and their workers. The industry thrived but currently faces the challenge of declining catch, which has serious implications for the livelihood of men and women in this local industry.

It appears that the shrimp industry was a men's sphere, where more men were identified to be actively engaged as owners or members of the shrimp catching operation crew. This result would be in support of the past studies where women in fishing communities were less engaged in productive work but were generally responsible for housework (Rola 1995; Santiago 2008; Parks et al. 2014).

If the analysis did not take the value chain approach and stopped at the catching segment, then this is true. Often, the individuals or the groups that undertake the actual production activities (e.g., going out at sea to catch shrimp) are considered as the fishers. This perception can have implications for the targeting of interventions, which in turn, may have the effect of excluding other actors like the women in the production process because their main roles fall in the other segment of the value chain. The prevalence of this perception and its inability to reflect the diversity and interdependencies of men's and women's activities underscore the importance of undertaking a value chain and gender analysis of the industry.

2 women showed that they were as capable as the men to be shrimp catching operators who can manage and finance the shrimp catching operation. According to the study participants, the preference for men workers in shrimp catching was related to the physical strength requirement of setting and pulling nets, lifting and carrying heavy boxes, and other tasks. The three women crew members, however, showed that they were able to perform the tasks done by men crew members. Moreover, the work of the operator or crew member's wife or daughter (i.e., help in repairing the nets and in preparing the food and other provisions for the crew when they went out to catch shrimps) can be easily underreported or underacknowleged.

A number of studies showed evidence of women actively taking part in actual catching of fish in the municipal waters in the country (Israel-Sobritchea 1992; Jimenez 2004; de la Cruz 2005; Asian Development Bank 2013; Ferrer et al. 2014). Moreover, there were indications that there were certain tasks

performed by women that were overlooked or underacknowledged. The FGD participants mentioned that women actually help their husbands in repairing the nets and in preparing for the provisions of the crew. These were in line with the findings of past studies (Bañez-Sumagaysay 2004, 2005; D'Agnes et al. 2005) where the women's participation was viewed as a "helping-out" role, undertaken part-time and without payment; women's work was considered an appendage to men's main tasks.

The picture shifted when moving to the trading phase, where the women dominated as traders. Most of the women traders were wives of the shrimp catching crew members. As shown in other studies, women dominated trading because this involved negotiation and verbal skills, which according to men, the women were good at (Ferrer et al. 2013). According to a key informant, the income of women traders was usually higher and certain compared to the income received by members of the shrimp catching crew. Income in shrimp catching was dependent on the volume of catch (affected by weather and other factors), price (set by the market), and the sharing system between the crew and the operators. In shrimp trading, earnings were assured and the level was dependent on the negotiating skill of the trader, amount sold, and time and effort spent on selling. In this case, women traders significantly contributed in the household economy and food security.

It appeared that the most powerful players in the local shrimp industry in the study sites were the 3 commission men. Most of the catch landed in only 4 commission houses owned by the 3 commission men. This made the fresh sergestid shrimp market an oligopoly with the 3 commission men as price leaders. They determined the price of the fresh shrimp sold to lower level traders (wholesalers and retailers), processors, and consumers. It was emphasized that these commission houses, although in the name of the husband, were run as a family business, with the wife and children helping.

In processing, men and women were owners of processing businesses. There were, however, more men workers because of the dominance of making of shrimp paste over other processed forms of shrimps. Physical strength and leg work were required in the mixing of the dried shrimps, which were expected of the men. Women's role was in the cooking of the shrimp paste and shrimp crackers.

Conclusions

The fisheries or the sergestid shrimp industry, in particular, has long been perceived as a male sphere as focus has been primarily on the actual catching, rather than the chain of activities involved. If the value chain is examined, the sergestid shrimp industry turns out to be a sphere of both women and men. While certain activities are more commonly undertaken by men, others are dominated by women. Although few women are involved in the catching operation, many of them are in the processing and trading. The notion that women participate minimally in fisheries economies as they focus on their reproductive roles at home does not hold true in the case of sergestid shrimp industry in the 2 study sites. Women are actively involved in a number of activities either as main actor in the value chain or a complement to men's labor in other segments.

The study shows that any development interventions in the local shrimp industry requires a contextualized understanding of men's and women's labor allocation and nature of involvement if interventions are to be more effective in targeting them for support. Gender analysis can aid in making interventions more inclusive by ensuring that the key players in the local shrimp industry are identified, their roles understood, and the target outcomes of a project are more suitable to their needs.

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