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Post harvest value addition process of exportable shrimp of Bangladesh

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Abstract: The study was conducted in Jessore, Khulna and Cox's Bazar districts during 2008 to identify the value chain and estimate marketing margin, cost and profits from post harvest level to until they are in the hand of foreign buyers. Purposive sampling method was used to collect primary data from value chain actor such as traders and exporter through pre-tested structured questionnaire. Value chain actors of shrimp identified in this study were fry collector, hatchery owner, nurserer, farmer, village traders, purchasing agents, depot owners and processing plants owner. The actors of value chain transport shrimp usually by van/rickshaw/pickup/boat from the farmlands to the processing plant after then they used ship/air to transport the shrimp to foreign buyer. It was found that many shrimp collectors/middlemen took loan from the depot owners in order to extend loan to the farmers. Packaging revealed the highest cost item for traders constituting one-third of total cost followed by transportation (23%), wastage (9%) and loading and unloading (8%). It is found that average gross margin was higher in peak period (Tk. 12667) against lean period (Tk. 11250). Exporters incurred highest 12% of total cost for wastage followed by 11% for bagging, 8% each for loading and unloading and clearing and forwarding and 7% for GSP certificate. As the marketing cost is same for all grades of shrimp, the highest difference between purchase and sale prices (gross margin) make C-grade more profitable to export. Therefore present finding ruled out the belief that higher profit can be earned for exporting big sized shrimp.

Key words: Value chain, marketing cost, marketing margin

Introduction

Bangladesh has unique and favourable environment for shrimp culture and traditional shrimp farming. Since early seventies shrimp farming started in the rice fields and in the salt pans with a view to producing shrimp sequentially with paddy and salt (Karim, 2003). Basically rice fields are converted into shrimp farms by flooding with saline water. The species produces are *bagda*, other shrimps and many other fin fishes. But the production potential remains unknown and unreliable. However due to low production cost, shrimp farming is more profitable in Bangladesh.

The production of shrimp by aquaculture method is almost an export - oriented activity producing an average output of 53,000 tons and earning US$530 million, which is some 8.0 per cent of the country's total exports in the 2007 - 08 fiscal year (July 2007 to June 2008) (BFFEA, 2007). Shrimp is the second largest foreign exchange earner after garments. Shrimp farming offers excellent employment opportunities through a series of backward and forward linkage activities. Shrimp industry would play an important role in absorbing surplus labour, particularly in the coastal areas of Bangladesh. The sector employs nearly 1.3 million rural people in forward and backward linkage activities like hatching, nursing, producing, harvesting, processing, exporting and other logistic support services. It has the highest potential for further development, enough to culture shrimps to earn US$1.5 billion by 2010 (BFFEA, 2007). Bangladesh is already among the top 10 exporters of shrimp in the world and accounts for some 3 per cent of global production. The EU (45%), USA (35%) and Japan (4%) are the world's major importers of shrimp from Bangladesh (Uddin, 2009).

Shrimp production in Bangladesh is increasing gradually through horizontal expansion of the farming area, not by the desired vertical expansion (Bhattacharjee *et al*., 1995). There exists a high potential of employment prospect and earning from exporting shrimp if only the existing problems relating to its production and marketing activities can be identified and essential measures to solve the problems can be taken timely. Several studies have been conducted earlier to emphasize the prospects of shrimp cultivation and to show the socio-economic consequences of the same, but the study on value addition process of post harvest shrimp is very scanty. Keeping in view the aforesaid facts, the present study was undertaken to identify the value chain and estimating marketing margin, cost and profits from post harvest level to until they are in the hand of foreign buyers.

Materials and Methods

The study was based on both primary and secondary data. Jessore, Khulna and Cox's Bazar districts were selected for collecting primary data based on the concentration of shrimp farms. Some exporters were selected from Dhaka district. For identifying the value chain and estimating marketing margin, cost and profits, data were collected from traders and exporters using pre-tested questionnaire in 2008. For this purpose, 60 traders and 30 exporters were purposively selected from Jessore, Khulna, Cox's Bazar and Dhaka. Secondary data were collected from various published and unpublished documents of government and non-government organization through personal communication and telephonic discussion. The data and information from field surveys, interviews and discussions were summarized which were analyzed and used to write this paper.

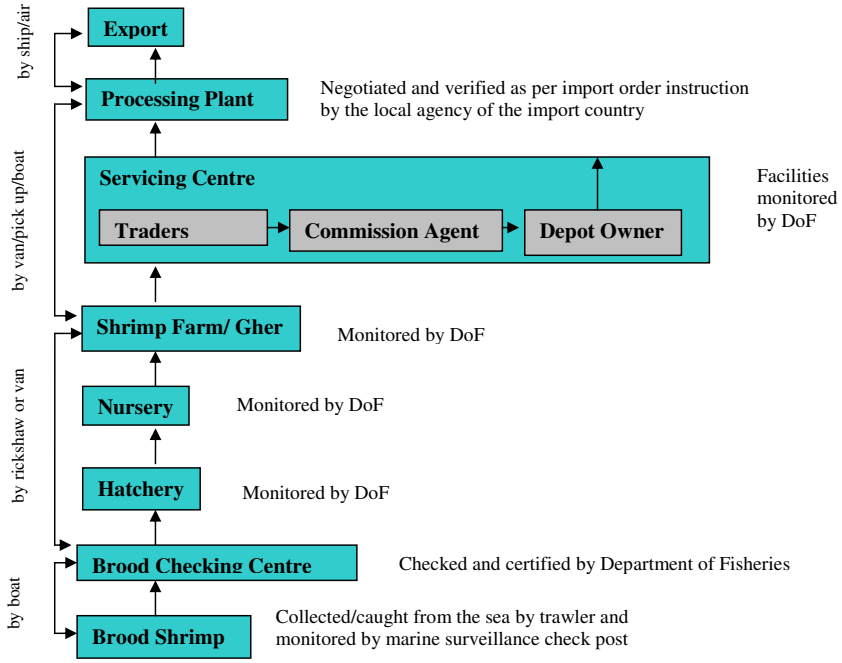
Results and Discussion

Value chains of shrimp in Bangladesh: Shrimp's value chain involves a combination of different actors (located along different points of the shrimp industry) with their institutional arrangements and actions from brood shrimp collection to end use. Kaplinsky and Morris (2001) describes the value chain as the full range of activities which are required to bring a product or service from initiation, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use.

Shrimp produced in the farm is marketed to overseas consumers through a number of channels that is from farm to village traders, purchasing agents, depot owners and final delivery to the processing plants (Flow Chart 1). To

ensure safety and quality of the shrimp, Department of Fisheries monitors the hygiene and sanitation conditions of the food through quality management and process - oriented supervision throughout the shrimp value chain.

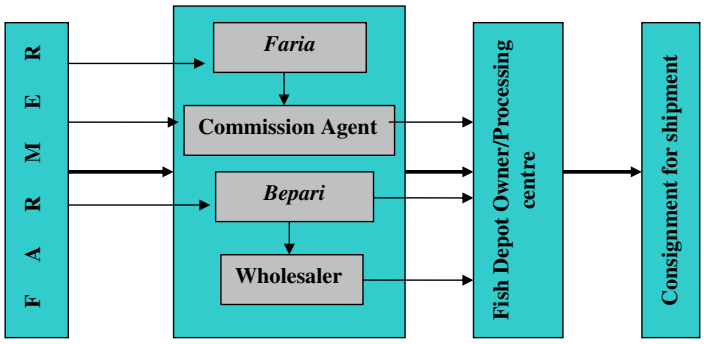
Flow chart 1. Value chain of shrimp



Source: Adopted from BFFEA, Bangladesh and Field Survey 2008

Post harvest marketing channel of exported shrimp: Three types of shrimp farmers found in the study areas are (i) farmers cultivate shrimp in their own land, (ii) cultivate in leased or rented land and (iii) cultivate in government land. Farmers collect shrimp post larvae (PL) from various sources. About 90% of the shrimp farmers buy shrimp fry from local villagers who collect them from nearby rivers and creeks. Farmers also buy PL from hatcheries. Since hatchery fries have a shorter life than local fries, it sold at a cheaper rate compared with natural fries. There are about 4,50,000 fry collectors in the coastal zones of Bangladesh. Farmers usually sell their produce to *Faria, Bepari* or commission agent (Flow Chart 2). *Faria* and *Bepari*, afterward, sell them to commission agent who delivers them to depot owner. Sometimes *Bepari* sells to the depot owner either directly or through wholesalers. Depot owner then sends their produce to the exporters for selling them to foreign buyers.

Flow chart 2. Post harvest marketing channel of shrimp



Source: Field survey 2008

The middlemen transport shrimps usually by van/pickup/boat from the farmlands to the urban depots, which are mostly situated near the factories. During the study period, it was found that many shrimp collectors/middlemen took loan from the depot owners in order to extend loan to the farmers or to buy shrimp from the farmers with the understanding that they must sell shrimp to particular depot owner. At the depots, some pre-processing activities such as washing, be-heading, icing and packaging are done before it goes to the factories for final processing. After receiving shrimp from different collectors, the depot owners immediately send those to the

factories directly. Most of the factories have a rule that the shrimp supplier should have a handsome amount of deposit in the bank, (about Taka 10-20 lacs) so that the supplier can deliver the required amount of shrimps on an emergency basis even if the factory fails to pay them on time.

Value addition process of shrimp in Bangladesh

Marketing cost of traders: Knowledge of distribution of marketing costs among various intermediaries is very important for improving the efficiency in marketing system. Marketing cost varied from intermediaries to intermediaries. The various functions involved in marketing of shrimp are: assembling, transportation, grading, processing and packing etc. In order to minimize marketing costs the marketing facilities should operate at the maximum possible capacities with the least possible loss produce. High marketing cost could be due to delay in communication and transportation system, losses, and lower degree of competition and poor marketing facilities. These situations created more opportunities for the intermediaries to make higher profit.

The marketing cost represents the cost of performing various marketing functions needed to transfer a commodity from the place of production to the ultimate consumer. Different types of marketing cost like transportation, loading and unloading, icing, tips and donation, market toll, wastage, rent, salary, fax, telex, electricity, personal expenses, telephone bill, entertainment and miscellaneous are incurred in case of marketing of shrimp. From table 1, it appears that the average traders' marketing cost was calculated at Tk.3483 for all areas, which ranges from Tk.3324 for Cox's Bazaar to Tk.3575 for Jessore. Packaging emerged as the highest cost item constituting one-third of total cost followed by transportation (23%), wastage (9%) and loading and unloading (8%).

Traders' margins during peak and lean periods: Peak period means the period when the export demand for shrimp is higher. The opposite period may be called as lean period. For that reason average price of shrimp during peak period remains higher compared with lean period. It is found that average gross margin was higher in peak period against lean period (Table 2). That means margin increases with the increase of volume of trade.

Marketing cost of shrimp exporters: The exporters' marketing cost depends on foreign destination, volume of shrimp per shipment, items of shrimp, conditions of consignment etc. Marketing costs are different for different foreign destinations. Marketing cost of exporters included costs of transportation, loading and unloading, packing materials, grading and packing, carrying, clearing and forwarding, market toll, wastage and losses, rent of shop, bagging, commission, tips and donation, terminal and handling charge (THC), bank service, salary and wages, GSP charge, export spoilage, telephone, personal expenses, entertainment and miscellaneous. The average marketing cost of exporter was estimated at Tk 7214/m.ton. Exporters incurred highest 12% of total cost for wastage followed by 11% for bagging, 8% each for loading and unloading and clearing and forwarding and 7% for GSP certificate (Table 3).

Marketing margin of shrimp exporters: Table 4 shows that average net margin or profit was calculate at Tk 2,16,536 per m. ton of which the maximum Tk 2,27,786 and the minimum Tk 2,02,786 were obtained from exporting C-grade and D-grade shrimp. As the marketing cost is same for all grades of shrimp, the highest difference between purchase and sale prices (gross margin) make C-grade

more profitable to export. This is in contrary to belief that higher profit can be earned for exporting big sized shrimp.

In Bangladesh the improvement and exploitation of the potential of frozen food export including shrimp has been slow (Sabur, 2008). Although there is very profound demand for shrimp in overseas markets, we have been unable to make any significant breakthrough in the factors related to export as well as structural weakness of shrimp. The shrimp has now been identified as an export focal point area in Bangladesh. This focal point implies detection of export potential in the changing export market scenario. Therefore, improved and better management practices in marketing of shrimp from production to export in foreign countries are suggested.

Table 1. Marketing cost of shrimp traders (Tk/ M. ton)

Cost items	Jessore	Khulna	Cox's bazaar	All area	Percentage of total
Packet	1113	1184	1085	1127	32.37
Transportation	800	800	815	805	23.11
Loading and unloading	311	316	226	284	8.16
Icing	50	60	52	54	1.55
Tips and donation	140	120	153	138	3.95
Market toll	52	50	54	52	1.49
Wastage	303	317	300	307	8.81
Rent	310	250	216	259	7.43
Salary	22	26	18	22	0.63
Fax, telex	75	67	75	72	2.08
Electricity	25	29	28	27	0.78
Personal expenses	40	33	32	35	1.00
Telephone bill	55	41	35	44	1.25
Entertainment	45	30	22	32	0.93
Miscellaneous	234	226	213	224	6.44
Total	3575	3549	3324	3483	100.00

Source: Field survey 2008

-Table 2. Traders' purchase prices, sale prices and margin of shrimp during peak and lean periods (Tk/m.ton)

Grades of shrimp	Peak period			Lean period		
	Purchase price	Sale price	Gross Margin	Purchase price	Sale price	Gross Margin
A-grade	630000	646000	16000	606667	619333	12667
B-grade	486667	500667	14000	443333	456333	13000
C-grade	341667	351667	10000	313333	324667	11333
D-grade	283333	294000	10667	263333	271333	8000
Average	435417	448083	12667	406667	417917	11250

Source: Field survey 2008

Table 3. Marketing cost of shrimp exporters

Cost items	Average cost (Tk/m. ton)	Percentage of total
Transportation	390	5.41
Loading and unloading	600	8.32
Market toll	85	1.18
Grading and packing	320	4.44
Wastage/loss of weight	850	11.78
Rent to the shop	250	3.47
Bagging	150	2.08
Commission	810	11.23
Tips and donation	250	3.47
Packet/ carton	125	1.73
Carrying (from exporters godown to port)	350	4.85
Clearing and forwarding (C&F)	570	7.90
Terminal and handling charges (THC)	116	1.61
Bank service	330	4.57
Salary and wages	217	3.01
Office and godown rent	250	3.47
GSP certificate	520	7.21
Export spoilage	300	4.16
Telephone, Fax, Telex	125	1.73
Personal expenses	88	1.22
Entertainment	120	1.66
Miscellaneous	398	5.52
Total	7214	100.00

Source: Field survey 2008

Table 4. Gross and net margins of exporting shrimp (Tk/m. ton)

Grades of shrimp	Purchase price	Sale price	Gross Margins	Marketing cost	Net margin/profit
A-grade	1130000	1360000	230000	7214	222786
B-grade	1070000	1290000	220000	7214	212786
C-grade	550000	785000	235000	7214	227786
D-grade	480000	690000	210000	7214	202786
Average	807500	1031250	223750	7214	216536

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