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Research Article

MARKETING CHANNELS AND VALUE CHAIN ASSESSMENT OF SEA BASS (*LATES CALCARIFER*) IN BAGERHAT OF BANGLADESH

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Abstract

The study was aimed to analyse the marketing channels, intermediary involvement, their roles in fish marketing, and associated costs throughout the movement of fish in Bagerhat, Bangladesh. Specifically, the investigation focused on the marketing channels and value chain of commercially significant marine fish, particularly sea bass (*Lates calcarifer*), in Bagerhat area. Questionnaire survey method was used for the data collection and relevant information of this research. It was observed that intermediaries collectively yield significant profits, resulting in higher fish prices in the consumer market. The marketing margin for sea bass was calculated at 26%, with fishermen receiving 74%, 80%, and 90% of the consumer purchase price in the primary, secondary, and retail markets, respectively. In the local sea bass market, five intermediaries were involved (sea bass farmer, *aratdar*, wholesaler, retailer, and consumers), while in distant markets included four intermediaries in total marketing channel (sea bass farmer, wholesalers, retailers, and consumers). The major challenges in the marketing channel are inadequate infrastructure, transportation amenities, and a significant number of intermediaries for the commercially important marine fishes. To establish a sustainable fish marketing system, requires the organizational support, government assistance, extension services, and training opportunities for market operators.

Introduction

Bangladesh is endowed with abundant and diverse fisheries resources, encompassing extensive inland and marine potential. The country boasts a rich array of both indigenous and exotic fish fauna, comprising 475 species of marine fish and 260 species of freshwater fish (DoF, 2013). The aquaculture industry in Bangladesh is a vital component of the nation's economy, driving employment opportunities, ensuring food security, and bolstering foreign exchange earnings (DoF, 2023). Among the cultivated aquatic species, sea bass (*Lates calcarifer*), locally referred to as *'Bhetki/Koral'* in Bangladesh and India (Siddik *el al*., 2016). Some farmers use the extensive method of raising this fry in mixed fish culture ponds, while others use the semi-intensive approach of raising them with carp fish. These ponds are used to cultivate sea bass, which weighs 7-8 kg when grown traditionally in 18–20 months and 2-3 kg when grown using the advanced traditional method in 1 year. The semi-intensive system of sea bass farming has a profit rate of 77.42% (Farhaduzzaman *et al*., 2022). There is therefore enormous potential for sea bass culture in Bangladesh's coastal areas due to its great fecundity, a rapid growth rate, nutrients rich flesh, excellent market acceptability, and a high economic worth in many countries (Yasmin *et al*., 2023).

Cite This Articale

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Bagerhat boasts a unique aquatic ecosystem characterized by its intricate network of rivers, canals, and estuaries. This geographical advantage, coupled with the presence of brackish water bodies, renders Bagerhat an ideal hub for sea bass cultivation (Zafar and Ahsan, 2006). Additionally, its strategic proximity to major urban centres, including the capital Dhaka, amplifies its importance in terms of market accessibility and distribution networks (Mamun *et al*., 2019).

The value chain of sea bass encompasses a multifaceted sequence of activities, encompassing hatchery operations, grow-out farming, processing, distribution, and retailing (Islam *et al*., 2006). The marketing systems exhibit variations across different regions and evolve (Ahsan *et al*., 2016). The escalation of fish prices is attributed to the presence of intermediaries in the marketing sector, exploiting fishing communities through an artificially constructed pricing chain at various levels (Kleih *et al*., 2003). The most substantial value addition was 105% occurs from wholesaler to retailer, and 90% was from wholesaler to exporter (Munir *et al*., 2006). Given the involvement of numerous intermediaries in the marketing chain, understanding their roles in the marketing channel becomes imperative (Ahsan *et al*., 2016). Furthermore, recognizing the dynamic nature of marketing chains and fish prices over time is crucial.

Effective marketing strategies play a pivotal role in optimizing the profitability and sustainability of sea bass farming ventures (Kabir and Hossain, 2017). This study aims to explore the diverse marketing approaches employed by stakeholders involved in the sea bass value chain, spanning from producers and processors to traders and exporters. By dissecting these strategies, the research endeavours to uncover insights into market segmentation, product differentiation, branding, and distribution channels, essential for enhancing the competitiveness of sea bass products both domestically and internationally.

Materials and Methods

Study area and sampling design

The research was conducted in two fishing communities (i.e. *arat*, retail fish market) in the Barakpur, Karapara union under Bagerhat sadar of Bagerhat (Fig. 1). Additionally, the study encompassed specific locations within the Bagerhat sadar upazila, including two retail fish markets and one *arat*. A total of, three retailer fish markets and two fish *arat*s were included as the study area. Total sample size was 100 which comprised mainly of 40 fishermen, *beparis*, and *depot* owners, along with 25 brokers and marketing agents, and an additional 35 retailers.

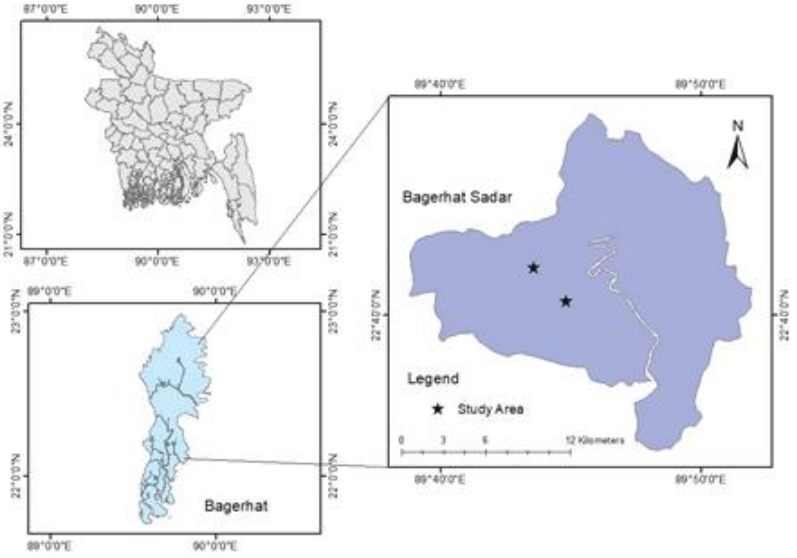

Figure 1. Location of the study areas in Bagerhat region of Bangladesh

Methods of data collection

This research utilized a blend of primary and secondary data sources. Primary data were gathered through a field assessment carried out from April to June 2022, employing a semi-structured questionnaire. Alongside the questionnaire, a comprehensive range of qualitative and quantitative data was gathered through focus group discussions (FGDs) and key informant interviews (KIIs).

Questionnaire survey

A questionnaire survey was conducted, interviewing various market operators including fishermen, assemblers, wholesalers, and retailers. The interviews centred on topics such as sea bass distribution and marketing systems, marketing costs, profits, margins, value chain analysis, and marketing constraints. The data collected were analysed using Microsoft Excel.

Focus group discussions (FGDs)

To obtain qualitative data, focus group discussions (FGDs) were employed, involving household participants who shared similar backgrounds and possessed effective communication skills to convey important concepts (Hossain et al., 2022). The FGDs served as a platform to gain insights into participants' perspectives, attitudes, beliefs, opinions, and ideas.

Participatory rural appraisal (PRA)

PRA encompasses various techniques for gathering information directly from rural communities in a participatory manner. Its key advantage lies in its ability to engage a broader spectrum of community members, resulting in more accurate data collection (Nabasa *et al*., 1995).

Rapid market appraisal (RMA)

RMA serves as an effective method for acquiring policy-relevant and intervention-oriented insights into various commodity sub-sectors (Holtzman, 2003). Typically, RMA methodologies heavily lean on semi-structured interviews conducted with key informants and well-informed observers within a given sub-sector. This approach requires engaging with a minimum number of participants across different stages of the commodity system.

Cross-check interviews

Personnel resources in the study area, including the Upazila Fisheries Officer (UFO) and other pertinent individuals, were interviewed to validate the precision of the data obtained from fishermen and intermediaries.

Data analysis

$$\text{Total marketing margin (\%)} = \frac{\text{Consumer purchase price} - \text{fishermen sales price}}{\text{Consumer purchase price}} \times 100$$

$$\text{Total marketing profit} = \text{Total marketing margin} - \text{Total marketing cost}$$

$$\text{Fishermen share on sales price (\%)} = \frac{\text{Fishermen sales price}}{\text{Consumer purchase price}} \times 100$$

Results and Discussion

Distribution channel

The distribution channel/pathway of the fish trade was consisted of three discernible tiers or marketing systems: primary, secondary, and final consumer markets (Fig. 2). The primary market was located at the landing area, serving as the initial destination for harvested fish. Subsequently, the secondary market operated as the intermediary stage, where collectors brought the fish from the primary market to the consumer market. Occasionally, these fish might be stored in freezers for future sale. The ultimate consumer market was managed by retailers who directly sold fish to the consumers.

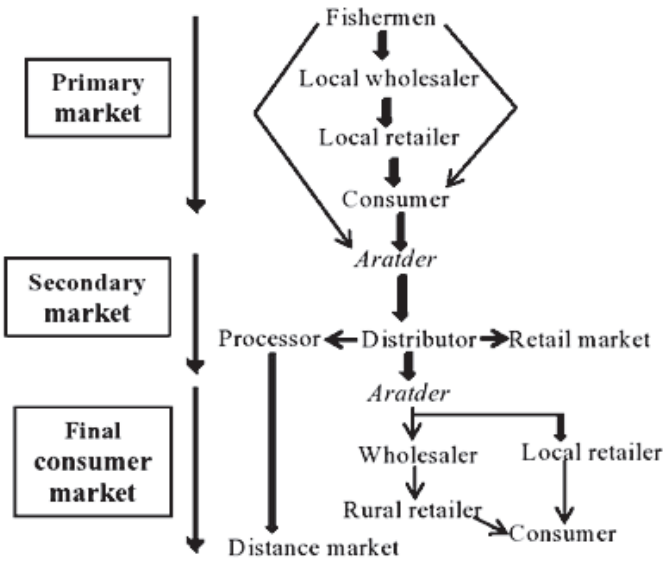

Figure 2. Distribution channel of sea bass

Marketing channels for sea bass

The marketing channels for sea bass in domestic supply chains involved a comprehensive network of intermediaries, comprising five intermediaries (sea bass farmer, *aratdar*, wholesaler, retailer, and consumers) for the local market and four intermediaries for distant markets (sea bass farmer, wholesalers, retailers, and consumers). In the course of these channels, before reaching the local market or wholesaler, the sea bass passed through key waypoints such as the landing centre, middleman, and *aratdar*. This intricate network formed the backbone of the sea bass marketing process, highlighting the strategic roles played by various intermediaries in facilitating the movement of sea bass from farmers to end consumers (Fig. 3).

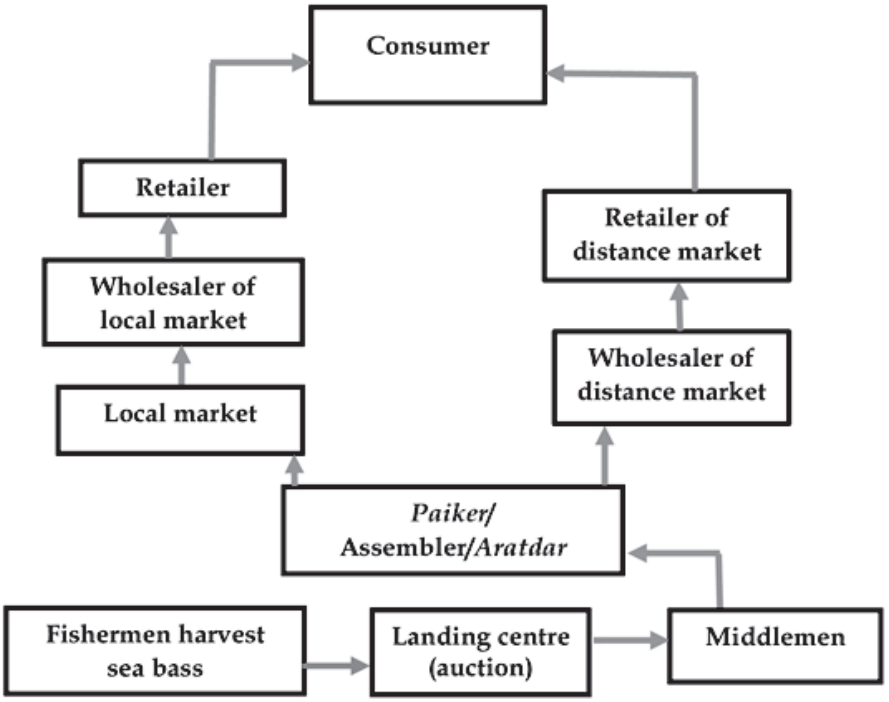

Figure 3. Marketing channels of sea bass.

Marketing margin and profit of sea bass

A detailed analysis of the marketing for every kilogram of fish revealed an overall marketing margin of BDT 183 or 26 percent of the price that consumers paid. This margin was allocated in three different markets: the main, secondary, and consumer markets got allocations of 6%, 10%, and 10% of the total margin, respectively. The whole marketing profit per kilogram of fish was broken down into detail and was BDT 100. The main/primary, secondary, and consumer markets contributed BDT 26, 40, and 34, respectively. Interestingly, the proportion of the sales price that gone to the fisherman was rather high; in the primary, secondary, and consumer segments, it was 74%, 80%, and 90%, respectively (Table 1).

Table 1. Marketing margin and profit of different intermediaries involved in the marketing of sea bass in domestic marketing (BDT/kg)

Market level	Particulars of marketing	Price BDT per Kg	% of consumer purchase price	Marketing margin (%)	Fishermen share in the sales price (%)
Primary Market	Purchase price (PP)	522	74%	80-74 = 6%	74%
	Marketing cost (MC)	20			
	Sales price (SP)	568			
	Marketing margin (MM=SP-PP)	46			
	Marketing profit (MP=MM-MC)	26			
Secondary market	Purchase price (PP)	568	80%	90-80 = 10%	80%
	Marketing cost (MC)	30			
	Sales price (SP)	638			
	Marketing margin (MM=SP-PP)	70			
	Marketing profit (MP=MM-MC)	40			
Consumer market	Purchase price (PP)	638	90%	100-90 = 10%	90%
	Marketing cost (MC)	33			
	Sales price (SP)	705			
	Marketing margin (MM=SP-PP)	67			
	Marketing profit (MP=MM-MC)	34			
Consumer purchase price:		705	100%		
Total marketing margin: 46+70+67 = 183 (26%)					
Total marketing profit: 26+40+34 = 100					

The supply chain of sea bass

The sea bass supply chain involved various activities, including transactions between different participants. Fishers played a crucial role as suppliers in the local fish market, contributing to both domestic and international levels. *Aratdars* were instrumental in facilitating negotiations between sellers and buyers. Locally, sea bass sold 14.7% of their catch to *beparis*. *Beparis* then sold the entire catch (100%) to local *aratdars*, who distributed it to consumers through retailers (Fig. 4). However, the majority of the fishers' supply, totaling 61%, was received by *aratdars*, with 12.3% going to *farias* and 12% to LC *paikers*, supporting both distant and local markets. Within the domestic market, *aratdars* sold 59.25% of their share to *paikers,* which was then made available to consumers through retailers. The remaining 40.75% was directly sold to retailers.

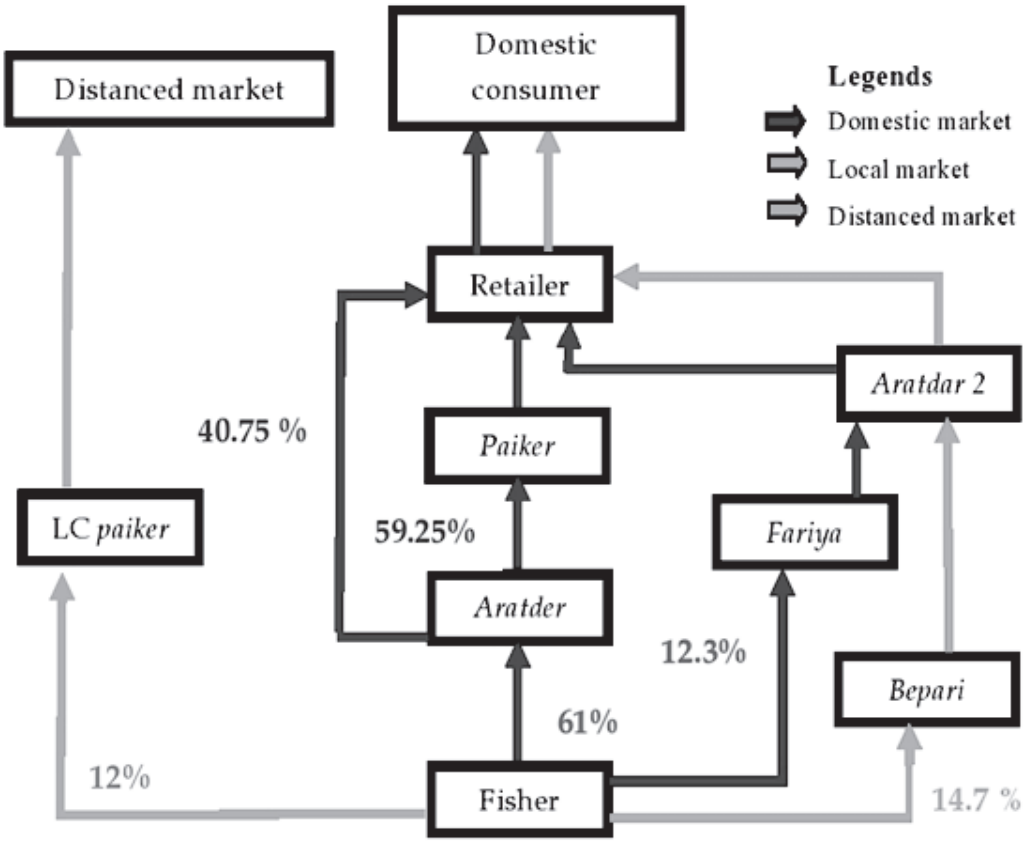

Figure 4. The supply chain of sea bass transacted by the value chain actors of the Bagerhat district.

Discussion

Commonly used measure to assess marketing efficiency is the marketing margin, representing the gap between the farmer gate charge and the subsequent charge at the retail level. Elevated marketing costs and profits often contribute to a larger margin. Inefficient performance of marketing functions, attributed to challenges like substandard roads, insufficient storage resulting in losses and inadequate handling, can drive up these costs. Additionally, in cases where there is substantial capital and a heightened risk (bodily handling, improper and delayed cooling, insufficient facilities for storage and preservation, prolonged exposure to high temperatures, contamination, and a lack of awareness of personal sanitation and hygiene) of losses, the potential for increased profits exists (Rahman *et al*., 2009).

Various intermediaries, including wholesalers, commission agents, *beparies*, *aratdars*, *paikers* both in nearby and far-off market places, sellers play vital roles in marketing channels. The current investigation discovered that sea bass had two marketing channels, each involving more than four intermediaries. Similar studies have identified comparable intermediary types in specific marketing channels. In the districts of Chittagong and Cox's Bazar, fishermen, *beparies*, *aratdars*, retailers, and consumers make up the main marine fish marketing route (Khalil, 2016). The fish supply chain for distant domestic markets consists of four intermediaries: farmer, *aratdar*, wholesaler, retailer, and consumer. In Bogura district's fish markets, three types of marketing channels exist: fish farmers-*paikers*, fish farmers-wholesalers, fish farmers-retailers, and fish farmers-retailers are the three groups of customers (Uddin, 2018). Ahmed *et al*. 2005 reported a market chain in Gazipur, from farmers to consumers, involving various middlemen such as neighbourhood wholesalers, shops, agents, and fish dealers. These findings collectively indicate that marketing channels typically encompass more than four intermediaries, contributing to an increased marketing margin.

As per Kohls and Uhl (2002), the marketing margin encompasses the charge of all functions, combining different tasks and duties carried out by middlemen. In the context of sea bass, the current study revealed a marketing margin of 26% of the consumer price. This suggests that the fish's marketing margin was more than 30% of the customer's buying price. These findings align with Islam *et al*. (2006), who observed a marketing margin of about 30% for bombay duck and shrimp about the consumer purchase price. However, the present study showed a slightly higher marketing margin, attributed to the value addition and a more extended marketing channel for sea bass. A further investigation into the marine fish selling route in the Cox's Bazar region found a marketing margin ranging from 25-30% (Ahsan, 2016). These collective findings suggest that most extended fish marketing channels have a marketing margin of 30% or more, contributing to an increased gap between the production price and buyer buying charge.

The current analysis indicated that fishermen received 74% of the customer buy price for sea bass when it came to their portion of the purchase price. The farmer's portion of consumer price increases with the length of the marketing chain (Shrivastava and Ranadhir, 1995). The results were similar to the results of some other studies. According to Islam *et al*. (2006), fishermen often got 68% of the customer's cost of purchase when certain marine species were marketed. Furthermore, Ahmed (1983) stated that for rohu and shingi, the producers earned 50% and the dealers received 65% of the share respectively. In an economic examination of fresh fish marketing, Ali *et al*. (2008) discovered that the producer's share was 61.62% and the marketing margin was 38.38%. The average marketing margin per quintal of fish for fisherman was 305.56 taka, while the average margins for *aratdar*, *paiker*, and retailer were 334.65, 515.80, and 340.40 taka, respectively (Ara *et al*., 2010). In the Cox's Bazar region, fishermen's share in the consumer market for both ribbon fish and bombay duck was less than 74% (Ahsan *et al*., 2016). In Kerala, India, fishermen's portion of customers' earnings ranged from an average of around 40% for less expensive fish kinds to roughly 65% for more expensive varieties. Several factors, such as the way they supplied fish on shore or at sea, fishermen typically received between 60 and 63% of the price paid by consumers (Sabur and Rahman, 1977). According to Ahmed (1983), manufacturers were paid between 50 and 65 percent of the retail price. The assembler and distributor received the majority of the marketing margin, while the retail margin accounted for just 5–10% of the final price paid by the customer. The results of this study, together with the previously cited studies, show that fishermen often only get a small portion of the money for the fish they catch. It was discovered that the length of the marketing channel had an inverse relationship with the farmer's portion of the consumer price (Parween *et al*., 1996). Results of the study clearly indicate that usually fishermen obtain small share of price from the harvested fishes.

Conclusion

The price of sea bass steadily rises with each stage of the market chain, peaking at the consumer level due to profit margins accumulated by each party involved. While intermediaries profit handsomely, the fishermen, those who are at the forefront of catching these prized fish, receive only a fraction of the consumer price. To rectify this disparity and bolster the economic fortunes of fishermen, intervention is imperative. Government and non-governmental intervention within the marketing channel is most important to address this issue, particularly concerning marine fish like sea bass, to enhance fishermen's economic well-being.

References

Ahmed N, Rahman M M and Rahman M M. 2005. A Study on Fish Marketing Systems in Gazipur, Bangladesh. Pakistan Journal of Biological Science. 8 (2): 287-292.

Ahmed N. 1983. Marketing of Selected Fishes in Bangladesh, a study in efficiency. Ph D. Thesis, Department of Marketing, University of Dhaka, Bangladesh. p 367.

Ahsan M K, Ghosh S K, Runa N S, Hasan M M and Kamal M. 2016. Marketing channel and value chain analysis of bombay duck and ribbon fish in Cox’s Bazar area of Bangladesh. Progressive Agriculture Journal. 27 (2): 222-227.

Ali E A, Gaya H I M and Jampada T N. 2008. Economic analysis of fresh fish marketing in Maiduguri Gamboru market and Kachallari Alau dam landing site of Northeastern, Nigeria. Journal of Agriculture and Social Science. 4 (1): 23–26. Online: 1814–960X 07–118/ZIP/2008/04–1–23–26 http://www.fspublishers.org

Ara T, Sultana Z, Ahmed S, Haque M R and Roy D. 2010. Present Status of Capture Fishery and Fish Marketing at Beel Dakatia in Khulna Region. Bangladesh Research Publications Journal. 3 (3): 1086-1094.

Brown E. 2012. *World fish farming: cultivation and economics*. Springer Science & Business Media. p 515, DOI : 10.1007 / 978-1-4684-6870-0 I.

DoF (Department of Fisheries). 2013. National fish week Compendium (In Bengali), Ministry of Fisheries and Livestock, Government of Bangladesh, Dhaka. pp 129-130.

DoF (Department of Fisheries). 2023. National fish week Compendium (In Bengali), Ministry of Fisheries and Livestock, Government of Bangladesh, Dhaka. pp 124-128. DOI: 10.4172/2155-9546.1000461

Farhaduzzaman A M, Khan M S, Osman M H, Shovon M N H, Azam M and Makhdum N. 2022. Progress of seabass, *Lates calcarifer* (Bloch, 1970) culture in Bangladesh: Field-level updates from the Bhola and Satkhira Districts. Int. J. Agril. Res. Innov. Tech. 12(2): 117-125. https://doi.org/10.3329/ijarit.v12i2.64097

Holtzman J S. 2003. Rapid Appraisals of Commodity Sub-sectors. Associates Inc., Bethesda, MD, USA. International collective in support of fish workers (ICSF). Accessed on April 2015. www.icsf.net/jsp/phpBB.

Hossain M T, Lima T R, Ela M Z, Khan L, Ahmed F, Al Masud A and Islam M N. 2022. Livelihood challenges and healthcare-seeking behavior of fishermen amidst the COVID-19 pandemic in the Sundarbans mangrove forest of Bangladesh. Aquaculture 546: 737348. doi: 10.1016/j.aquaculture.2021.737348

Islam M S, Akteruzzaman M and Ahmed N. 2006. Study on marketing and value chain of some commercially important coastal and marine aquatic products of Bangladesh. Research Report, Bangladesh Fisheries Research Forum. Dhaka, Bangladesh. pp. 11.

Kabir M H and Hossain M Y. 2017. Value Chain Analysis of the Fishery Industry in Bangladesh: A Study on Fish Farmers in Gazipur District. Asian Journal of Agriculture and Rural Development. 7(2): 1-11.

Khalil M I. 2016. Marine fish marketing in some selected areas of Bangladesh. M S Thesis, Department of Co-operative and Marketing, Bangladesh Agricultural University, Mymensingh, Bangladesh. p 72.

Kleih U, Alam K, Dastidar R, Datta U, Oudwater N and Ward A. 2003. Livelihoods in Coastal Fishing Communities and the Marine Fish Marketing Systems of Bangladesh. NRI Report No.2712, Natural Resources Institute (NRI), Greenwich University, London. p 168.

Kohls R L and Uhl J N. 2002. Marketing of agricultural products. Ninth edition, New Jersey: Macmillion Publishing Company. p 573.

Mamun M A A, Islam M A and Rahman M M. 2019. Fish Farming in Bagerhat District: A Study on the Socio-Economic Status of Fish Farmers. Journal of Fisheries. 7(1): 333-339.

Munir A, Nazrul I and Shamsuddoha M. 2006. Value Chain Analysis in the Dry Fish Production and Marketing of Post-Harvest Fishery Products (PHFP) in the Coastal Belt of Bangladesh. Bangladesh Fisheries Research Forum publication, pp. 87-112.

Nabasa J, Rutwara G, Walker F and Were C. 1995. Participatory Rural Appraisal: Practical Experiences, Chatham, UK: Natural Resources Institute. p 52.

Parween S, Dutta S K and Hossain M A. 1996. Post-Harvest Management of Smaller Prawns: Present Status, Problems and Better Management Strategies Proceeding of National Workshop on Small Indigenous Fish Cultural in Bangladesh. Rajshahi, Bangladesh, pp. 141-146.

Rahman M M, Hossain M M, Rahman S M and Alam M H. 2009. Fish Marketing System in Khulna, Bangladesh. Journal of Innovative and Development Strategy 3(5): 27-31.

Sabur S A and Rahman L. 1977. Marine Fish Marketing in Bangladesh. The Bangladesh Journal of Agricultural Economics. 2(1): 95-107.

Shrivastava R S and Ranadhir M. 1995. Efficiency of fish marketing at Bhubaneshwar city of Orissa (India): Some policy implications. Bangladesh. Journal of Agricultural Economics. 18(1): 89-97.

Siddik M A B, Islam M A, Hanif M A, Chaklader M R and Kleindienst R. 2016. Barramundi, *Lates calcarifer* (Bloch, 1790): a new dimension to the fish farming in coastal Bangladesh. Journal of Aquaculture Research and Development. 7: 1-3.

Uddin M H, Sirazunnesa M S, Haq Z F, Ahmed J and Fatema M K. 2018. Structural Performance of Fish Market in Bogura District, Bangladesh. Research in Agriculture Livestock and Fisheries. 5(3): 399-410.

Yasmin, F, Bosu, A, Hasan, M M, Islam, M A, Ullah, M R, Khan, A B S, Akhter, M, Karim, E, Hasan, K R. and Mahmud, Y (2023). Assessment of Growth Performance and Survivability of Asian Seabass (*Lates calcarifer*) under Different Stocking Densities in Brackish Water Ponds of South-West Coast of Bangladesh. Sustainable Aquatic Research. 2(2), 92-100. DOI: 10.5281/zenodo.8296609

Zafar M and Ahsan M N, 2006. Marketing and value chain analysis of mud crab (*Scylla* sp.) in the coastal communities of Bangladesh. In value chain analysis and market assessment of coastal and marine aquatic products of Bangladesh. Bangladesh Fisheries Research Forum, Dhaka, pp. 25-53