

Availability of Fish Species and Socio-economic Conditions of Fish Sellers at the Selected Fish Markets in Gazipur Sadar Upazila, Bangladesh

Humyra Khatun Sathi¹, Md. Rakib Hasan¹, Tanjima Tabassom¹, Pinky Rani Kundu¹ and Umme Kaniz Fatema^{1*}

¹Department of Aquaculture, Faculty of Fisheries, Bangabandhu Sheikh Mujibur Rahman Agricultural University, Gazipur- 1706, BANGLADESH.

*Corresponding Author: ukfatema@bsmrau.edu.bd

ORCID

<https://orcid.org/0000-0002-8121-7951>



www.jrasb.com || Vol. 2 No. 5 (2023): October Issue

Received: 01-08-2023

Revised: 03-10-2023

Accepted: 12-10-2023

ABSTRACT

A survey-based study was conducted to explore the availability of fish species and the socio-economic conditions of fish sellers at the selected fish markets in Gazipur Sadar upazila. Data were collected from four fish markets namely Shimultoli, Salna, Joydebpur, and Chowrasta fish market. A total of 40 fish sellers, 10 from each fish market were interviewed at the fish market. To understand the pricing dynamics and variety of fish in each market, structured questionnaires were used to collect information on the availability of different fish species, their sizes, and prices per kilogram. In addition, the survey looked into the socio-economic backgrounds of fish sellers, including age, marriage status, income, family size, access to financial services, housing conditions, water sources, electricity supply, and medical facilities. A total of 45 fish species of both freshwater and marine water and 15 species of dried fish species were available in these markets. Not only the prices of fishes varied from species to species, but also from market to market. Almost all the fish sellers were male and married (88%). Among the fish sellers, both joint and nuclear families were present. Monthly income of the fish sellers was between BDT 15,000 and 40,000. 73% of the fish sellers had tin shed house, 97% had well sanitary system, 98% drank tube well water, 95% had electricity facility and 78% had medical facilities. Only 36% of the fish sellers had bank accounts. However, the fish sellers faced some problems such as lack of awareness, lack of credit support etc. Therefore, more technical and financial support are needed for ensuring their socio-economic advancement.

Keywords- Fish species availability, Dry fish, Fish market, Socio-economic condition.

I. INTRODUCTION

Bangladesh is a country with an abundance of water resources, including rivers, beels, khals, floodplains, canals, and a large number of tiny wetlands and ponds (Hossain, 2014; Khondoker et al., 2014). The favorable geographical location of Bangladesh derives with a large number of aquatic species diversity and facilitates abundance of natural resources to support prospects of fisheries sectors (Shamsuzzaman et al., 2017). Total fish production in Bangladesh is 46.21 lakh

MT and aquaculture contributes for 56.24% of the nation's total fish production (DoF, 2022). Bangladesh is now ranked 3rd in inland open water capture production and 5th in world aquaculture production (DoF, 2022). More than 12% of Bangladesh's of populations are directly or indirectly engaged in various activities under fisheries sector for their livelihood (DoF, 2020). Rural and underprivileged people rely heavily on freshwater fisheries for their livelihoods in Bangladesh (Mazid, 2002). Fisheries sector can contribute to provide employment directly, a source of livelihood as fishers and

other related trade and this industry is also very promising from the standpoint of the nation's economic growth (Shamsuzzaman et al., 2020). Fish farming activities in Bangladesh have significantly improved the socio-economic circumstances of many rural people (Goswami et al., 2020). Global fish production is estimated to have reached about 179 million tonnes in 2018, of which capture fisheries, and aquaculture production have reached a record of 96.4 million tonnes, and 82.1 million tonnes respectively (FAO, 2020). Almost 50% of the world's fish is produced by aquaculture which is one of the industries with highest growth in protein food production (FAO, 2022). With a per capita consumption of 62.58 g/day compared to a target of 60 g/day, Bangladesh has developed into a fish-producing nation that supplies about 60% of the total daily animal protein intake of its population (DoF, 2020).

Since fish and fishery products are extensively traded commodities, fish production is a crucial part of the marketing process and people congregate in a fish market of this sort to buy and sell fish. A fish market is another term for a regular gathering of individuals for the purpose of buying and selling fish or products derived from the fishing industry (Debnath et al., 2019). The fish marketing system is the means by which producers (farmers) deliver fish to customers. Customers of fish markets must rely on a successful fish marketing strategy that is essential for the sustainability of aquaculture (Rahman and Islam, 2020; Hoque, 2021). This requires knowledge of the fish market, which helps determine the market price, how much risk to take for adequate revenues, and the best marketing channel to use (Aura et al., 2019; Das et al., 2020). In order to properly plan and develop any industrial sector, updated data on resources, prospects, conditions, and issues is required (Das et al., 2018). Lack of appropriate information and socio-economic data frequently results in the implementation of developmental programs failing (Hasan et al., 2012). Research has been done to examine the socio-economic environment of the sellers in various parts of Bangladesh as well as the fish marketing system and channel (Islam et al., 2007; Asaduzzaman et al., 2010; Debnath et al., 2019; Deb and Dey, 2020; Islam et al., 2021). For the expansion of fish and aquaculture in the Dhaka division (capital of Bangladesh), Gazipur Sadar is one of the most crucial upazilas. Even though there are a lot of individuals involved in fish farming and there are a lot of fisheries resources accessible, it is remarkable that there has not been any recent research published on the fish species that are available in the market, and the socio-economic condition of the fish sellers in Gazipur Sadar upazila. Therefore, the present study was conducted to investigate the availability of fish species in four different fish markets of Gazipur Sadar upazila and to understand the socio-economic conditions of fish sellers in these areas.

II. MATERIALS AND METHODS

Study Area

Four fish markets were selected as study areas namely Shimultoli, Salna, Jaoydebpur and Chowrasta fish market which are situated in the Gazipur Sadar upazila. To look into the socio-economic status of fish sellers at the fish markets and the availability of fish species, the study was conducted during March to June, 2023.

Data Collection

Primary data were gathered for the survey-based investigation. Ten fish sellers from each fish market made up the total 40 fish sellers who provided the primary data. The chosen fish sellers were subjected to structured interviews as part of the data collection process. The primary topics covered by the questionnaire were as follows:

Fish Species Availability

During the study period, data on the various fish species that were available, their sizes, and costs per kilogram, market demand, dry fish species availability etc. were gathered. This information aids in determining the variety and pricing trends of fish in each market.

Socio-economic Conditions

Information was gathered on the socio-economic background of fish sellers, including information on their age, marital status, income, family size, access to financial services, housing situation, water supply, power source, and access to medical facilities. These details shed light on the way of life and financial security of fish sellers.

Data Analysis

All the collected data were organized, analyzed by MS-Excel and then presented in tabular and graphical forms to understand the fish species availability and socio-economic conditions of fish sellers of four different fish markets in Gazipur Sadar upazila.

III. RESULTS AND DISCUSSION

Fish Availability and Market Dynamics

Variety of Fish Species

From popular freshwater species like Rui, Catla, and Pangas to marine delicacies like Ilish and Surma, the fish market in the Gazipur region offers a great diversity of fish species (Table 1). Around 45 species of freshwater and marine fish species were available in different four fish markets in Gazipur Sadar upazila. This variety highlights Gazipur's significance as a key regional hub for the trade of fish. Debnath et al. (2019) conducted a survey on marketing of fish and fishery products in Joydebpur fish market, Kapasia fish market and Awrakhali fish markets in Gazipur district and found Indian major carps i.e. Rui, Catla, Mrigal and exotic fish i.e., Silver carp, Grass and Common carp, Tilapia, Pangas etc. availability that is similar to our findings.

Price Variability

The price per kilogram of fish varies slightly between different fish markets in the Gazipur Sadar upazila, reflecting regional dynamics of supply and demand. Table 1 demonstrates that Indian major carps were sold for more money than exotic fish. Due to the low demand or inferior flavor of exotic fish, consumers or local sellers are unwilling to pay high prices for the fish. It is noticeable that some species with high demand, like Ilish, get higher prices (Table 1). Debnath et al. (2019) found that the price of Indian major carp was higher than the exotic fish, which favored the present findings. Fish availability and demand play a major role in determining fish prices.

Market Availability

The year-round availability of numerous fish species in Gazipur Sadar upazila suggests a strong supply chain that continuously satisfies customer preferences. Some species, though, must be harvested sustainably because they are sporadic or scarce (Table 1). The fish

species were collected from the fish markets of Chottogram, Trishal, Valuka, Jatrabari, Kawranbazar by using the transport vehicle like Truck, Pickup, Van etc.

Market Demand

The various market demand levels point to potential for market expansion and niche marketing techniques. Matching product offerings to consumer tastes can be advantageous for fish sellers, particularly for species that are in great demand. Table 1 shows market demand for different fish species in four fish markets in Gazipur Sadar upazila.

Availability of Dry Fish Species

Around 15 dry fish species are available in four fish markets in Gazipur Sadar upazila (Table 2). The price of these dried fish species was almost similar and these dried fish species were always available in four different fish markets. Availability of Dry fish species mainly collected from the areas of Mohammadpur, Kawranbazar, Abdullahpur, Chowrasta etc.

Table 1: Availability of freshwater and marine fish species of four different market in Gazipur Sadar upazila

Fish Species		Fish Size (Kg*)	Fish Price (Average)/ Kg (BDT)				Market Availability	Market Demand	
			Fish Market						
	Local Name	Scientific Name	Shimultoli	Salna	Joydebpur	Chowrasta			
Freshwater Fish	Rui	<i>Labeo rohita</i>	2-3	350	350	320	300	***	***
	Catla	<i>Catla catla</i>	3	540	550	540	500	***	***
	Kalibaus	<i>Labeo calbasu</i>	3-4	450	450	450	400	***	***
	Bighead carp	<i>Hypophthalmichthys nobilis</i>	2-3	230	250	230	200	***	**
	Silver carp	<i>Hypophthalmichthys molitrix</i>	1.5-2	230	250	230	200	***	**
	Mrigal	<i>Cirrhinus mrigala</i>	1.5-2	320	350	320	300	***	**
	Grass carp	<i>Ctenopharyngodon idella</i>	2-2.5	435	450	435	400	***	**
	Bata	<i>Labeo bata</i>	> 0.1	220	220	220	200	***	**
	Sar punti	<i>Puntius sarana</i>	< 0.5	250	230	230	200	***	**
	Magur	<i>Clarias batrachus</i>	> 0.2	500	500	500	450	***	**
	Shing	<i>Heteropneustes fossilis</i>	> 0.1	550	500	500	450	***	**
	Pabda	<i>Ompok pabda</i>	< 0.1	800	850	800	700	***	**
	Gulsha	<i>Mystus cavasius</i>	< 0.1	630	650	630	600	***	**
	Tengra	<i>Mystus tengra</i>	< 0.1	200	180	180	150	***	**
	Pangas	<i>Pangasius pangasius</i>	1.5	150	130	150	120	***	***
Boal	<i>Wallago attu</i>	1-10	500	500	500	450	***	***	
Ayre	<i>Sperata aor</i>	4-5	1000	1000	1000	900	**	**	
Taki	<i>Channa punctata</i>	< 0.15	280	280	280	250	***	**	
Shol	<i>Channa striatus</i>	1-10	800	800	800	700	**	**	
Gajar	<i>Channa marulius</i>	1.2	850	850	850	800	***	**	

Marine water Fish	Koi	<i>Anabas testudineus</i>	< 0.2	250	250	250	200	***	***
	Tilapia	<i>Oreochromis niloticus</i>	< 0.5	180	180	180	150	***	***
	Mola	<i>Amblypharyngodon mola</i>	< 0.1	230	230	230	200	**	**
	Poa	<i>Otolithoides pama</i>	< 1	330	330	330	300	**	*
	Rup chanda	<i>Pampus chinensis</i>	< 0.15	600	600	600	550	**	*
	Ilish	<i>Tenualosa ilisha</i>	2–2.5	1800	1800	1800	1600	**	***
	Surma	<i>Scomberomorus cavalla</i>	0.5	300	300	300	250	**	**
	Rita	<i>Rita rita</i>	3	280	280	280	250	**	**
	Loitta	<i>Harpadon nehereus</i>	< 0.1	220	220	220	200	**	**
	Shapla pata	<i>Dasyatis thetidis</i>	0.5–1	750	750	750	700	*	*
	Kaikka	<i>Xenentodon cancila</i>	1–1.5	250	250	250	200	*	*
	Taposhi	<i>Polynemus paradiseus</i>	< 0.1	450	450	450	400	**	*
	Coral	<i>Lates calcarifer</i>	3–4	300	300	300	250	**	*
	Tulardandi	<i>Silloginopsis panijus</i>	2–3.5	750	750	750	700	*	*
	Corsula	<i>Rhinomugil corsula</i>	2–4	420	420	420	380	**	*
	Baim	<i>Mastacembalus armatus</i>	< 0.1	330	330	330	300	**	**
	Baila	<i>Hemibagrus menoda</i>	< 0.1	300	300	300	260	***	**
	Fali	<i>Notopterus notopterus</i>	0.1	220	220	220	170	**	*
	Bagha ayre	<i>Bagarius bagarius</i>	10–12	1250	1250	1200	1000	*	*
	Chanda	<i>Chanda nama</i>	< 0.1	150	120	120	100	**	**
Kachki	<i>Corica soborna</i>	< 0.05	500	450	500	400	**	**	
Gutum	<i>Lepidocephalichthys guntea</i>	< 0.1	570	550	500	450	*	*	
Batasi	<i>Neotropius atherinoides</i>	< 0.05	670	700	650	600	***	**	
Chapila	<i>Gudusia chapra</i>	1–1.5	500	480	450	380	**	**	

*Kg= Kilogram

Market availability: ***=year-round; **= seasonal; *=rare

Market demand: ***= high demand; **= medium demand; *=low demand

Table 2: Availability of dry fish species of four different fish markets in Gazipur Sadar upazila

Local Name	Scientific Name	Average Price/ Kg (BDT)	Market Availability	Market Demand
Chela	<i>Salmostoma acinaces</i>	620–650	***	**
Loitta	<i>Harpadon nehereus</i>	600–800	***	***
Kachki	<i>Corica soborna</i>	450	***	***
Chapila	<i>Gudusia chapra</i>	380–400	***	***
Poa	<i>Otolithoides pama</i>	700	***	**
Punti	<i>Puntius sophore</i>	500–1100	***	**
Chouka	<i>Ilisha fillgera</i>	500	***	***
Churi	<i>Trichiurus muticus</i>	800	***	**
Guinnya	<i>Labeo gonius</i>	1000	***	*

Baim	<i>Mastacembelus armatus</i>	1200	***	*
Chanda	<i>Chanda nama</i>	600–700	***	**
Taki	<i>Channa punctata</i>	600	***	**
Shol	<i>Channa striata</i>	600	***	*
Physha	<i>Thryssa mystax</i>	600–800	***	*
Chepa	<i>Puntius sophore</i>	1200	***	***

Market availability: ***=year-round; **= seasonal; *=rare

Market demand: ***= high demand; **= medium demand; *=low demand

Socio-economic Conditions of Fish Sellers

Age and marital status

Most fish sellers are married and between the ages of 22 and 60 years (Table 3). This highlights the role of fish selling as a livelihood option for individuals of different age groups and family responsibilities. Adhikary et al. (2018) found the average age groups of 20–65 years among the fish retailers in Jashore market that was quite similar to current findings.

Family Size and Monthly Income

Families with five to twelve people are live on a monthly income of between 15,000 and 40,000

Bangladeshi Taka (BDT). Number of fish seller and their average monthly income are shown in Figure 1. A sizable fraction of the community's residents benefits economically from these revenues. According to Adhikary et al. (2018), 23% of fish farmer families were nuclear and 77% of fish farmer families were joined which partially support the present findings.

Access to Banking Services

Only 36% of fish vendors have bank accounts (Table 3), suggesting that financial inclusion activities are needed to enhance money management and credit availability.

Table 3: Socio-economic conditions of fish sellers from four different fish markets in Gazipur Sadar upazila

Socio-economic Features	Response of Participants (n=40)	
Age (years)	22–60	
Marital status	Married	88%
	Unmarried	12%
Income (monthly)	15,000–40,000 BDT	
Family member (number)	5–12	
Bank account	Yes	36%
	No	64
House	Tin shed	73%
	Flat building	27%
Sanitary	Yes	97%
	No (other)	3%
Drinking (tube well)	Yes	98%
	No	2%
Electricity	Yes	95%
	No	5%
Health care	Yes	78%
	No	22%

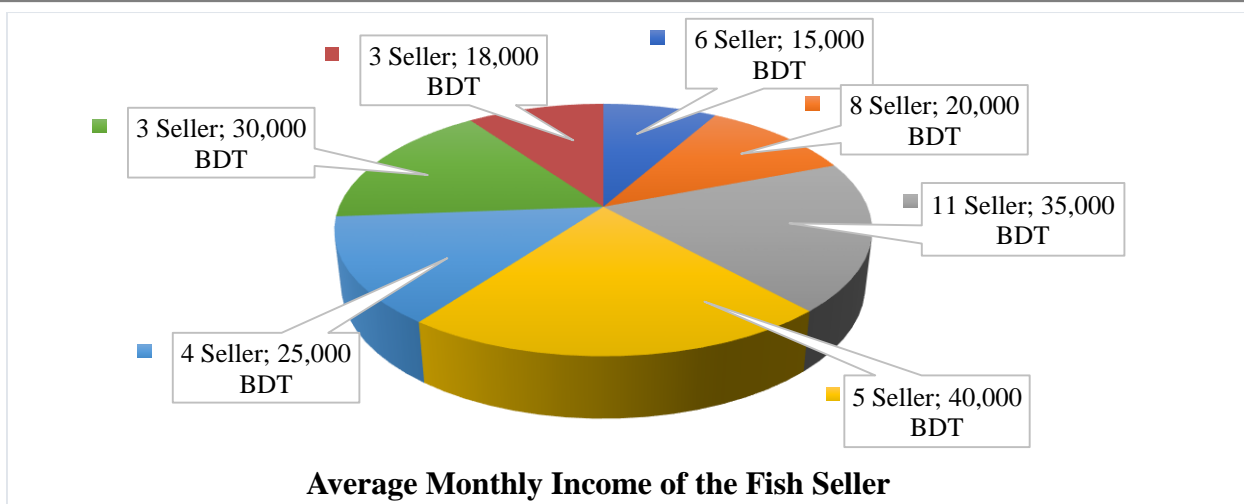


Figure 1: Average monthly income of 40 fish sellers of four different market in Gazipur Sadar upazila

Housing and Sanitation

A large percentage of fish vendors reside in tin-shed homes, suggesting that housing infrastructure could be improved (Figure 2). Adhikary et al. (2018) found that about 69% households of the fish farmer were tin shed that supports the findings of the present study. However, the majority have access to tube well water and properly kept sanitary facilities, which improves their living conditions. Adhikary et al. (2018) also found that all of the retailer's households used tube wells to obtain their drinking water, with 71% of those households using their own tube wells and the remaining 29% using tube wells belonging to others which partially supports the present

findings.

Electricity and healthcare

Both the availability of electricity and access to healthcare facilities are quite high with 95% of people having access to electricity and 78% reporting good medical service (Figure 2). These elements help the community of fish sellers live more comfortably. Adhikary et al. (2018) found that 16% of retail households relied on unqualified village doctors who lacked medical science knowledge, while 18% received healthcare from community hospitals, 4% from private clinics, and 62% from upazila health complexes. The findings are in line with the present study.

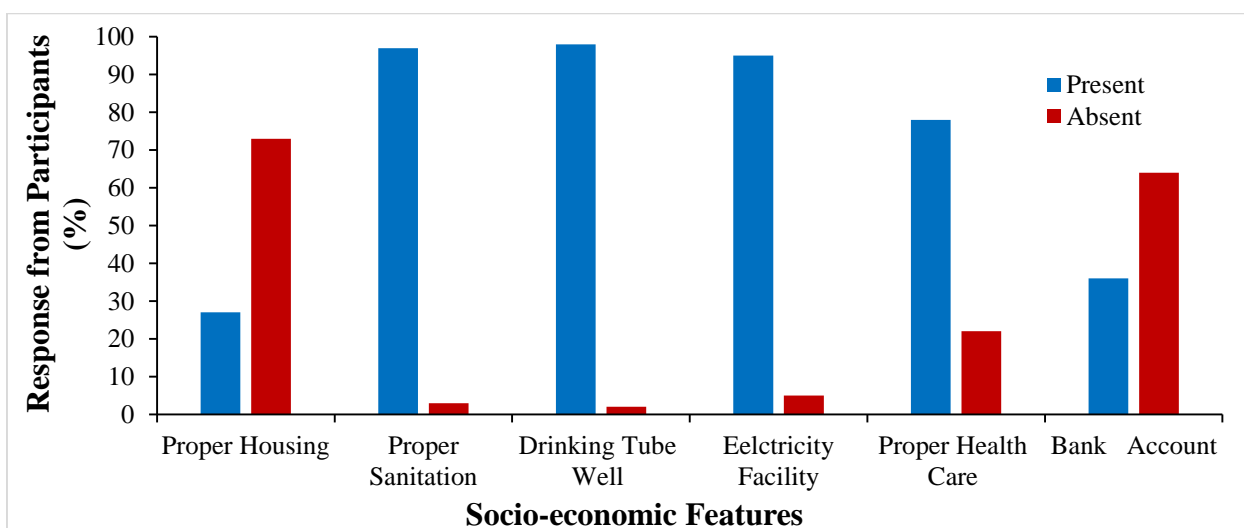


Figure 2: Socio-economic conditions of fish sellers in four different fish market in Gazipur Sadar upazila

IV. CONCLUSION

This study shed light on the wide range of fish species sold in the four different marketplaces in the

Gazipur Sadar upazila and offered insightful information about seasonal variations in prices. Additionally, it provides an in-depth analysis of the socio-economic backgrounds of fish sellers, illuminating their diversity in

terms of demographics and level of economic prosperity. This study offers the groundwork for understanding the dynamics and socio-economic environment of the fish market in the Gazipur Sadar upazila despite its limitations, including a cross-sectional design and a constrained time frame. In order to develop methods that advance sustainable fisheries management and improve the socio-economic circumstances of individuals involved in the trade, it provides a key reference point for decision-makers, researchers, and stakeholders.

REFERENCES

- [1] Adhikary, M. R., Rahman, M. A., Al Asif, A., & Adhikary, R. K. (2018). Socio-economic status of fish retailers in Jashore sadar, Bangladesh. *Asian–Australasian Journal of Food Safety and Security*, 2(2), 100–108.
- [2] Adhikary, R. K., Kar, S., Faruk, A., Hossain, A., & Bhuiyan, M. N. M. (2018). Contribution of aquaculture on livelihood development of fish farmer at Noakhali, Bangladesh. *Asian–Australasian Journal of Bioscience and Biotechnology*, 3(2), 106–121.
- [3] Aura, C. M., Nyamweya, C. S., Njiru, J. M., Odoli, C., Musa, S., Ogari, Z., Abila, Z., & Oketch, R. (2019). Using fish landing sites and markets information towards quantification of the blue economy to enhance fisheries management. *Fisheries Management and Ecology*, 26(2), 141–152.
- [4] Asaduzzaman, M., Tayebi, K. A., Alam, M. M., Ali, M. S., & Barman, A. C. (2010). Marketing system of fishes and socioeconomic condition of fish retailers in Rajshahi City Corporation. *Journal of Agroforestry and Environment*, 3(2), 207–211.
- [5] Das, D., Mukhopadhyay, S., Sarbajna, A., & Chakraborty, S. B. (2020). Does fish price depend solely on weight? A market survey analysis from four districts of West Bengal, India. *Journal of Fisheries*, 8(3), 903–911.
- [6] Das, M., Islam, M. R., Akter, T., Kawser, A. Q. M. R., & Mondal, M. N. (2018). Present status, problems and prospect of fish farming at Gazipur Sadar upazila in Bangladesh. *Progressive Agriculture*, 29(1), 53–63.
- [7] Deb, A. R., & Dey, R. C. (2020). Study on fish marketing system of some fish species in Hobiganj District, Bangladesh. *Archives of Agriculture and Environmental Science*, 5(3), 347–53.
- [8] Debnath, S. L., Islam, M. F., Haque, S. A., Miah, M. I., & Uddin, M. J. (2019). A study on fish market and marketing system in Gazipur district, Bangladesh. *Asian–Australasian Journal of Bioscience and Biotechnology*, 4(1), 7–13.
- [9] DoF. 2020. Yearbook of Fisheries Statistics of Bangladesh, 2018–19. Fisheries Resources Survey System (FRSS), Department of Fisheries, Bangladesh.
- [10] DoF. 2022. Yearbook of Fisheries Statistics of Bangladesh, 2020–21. Fisheries Resources Survey System (FRSS), Department of Fisheries, Bangladesh: Ministry of Fisheries and Livestock, 2022, volume 38: 138pp.
- [11] FAO, 2020. The State of World Fisheries and Aquaculture 2020. Sustainability in action. Rome. 206 pp.
- [12] FAO, 2022. The State of World Fisheries and Aquaculture 2022. Towards Blue Transformation. Rome. 236 pp.
- [13] Goswami, P., Noman, M. R. A. F., Islam, M. S., & Huda, S. (2020). Use of fish farming practices by the fish farmers. *Research in Agriculture Livestock and Fisheries*, 7(3), 565–576.
- [14] Hassan, M. N., Rahman, M. M., Hossain, M. M., Nowsad, A. A. K. M., & Hossain, M. B. (2012). Post-harvest handling and marketing of shrimp and prawn in south–western region of Bangladesh. *World Journal of Fish and Marine Sciences*, 4(6), 651–656.
- [15] Hoque, M. Z. (2021). Sustainability indicators for sustainably–farmed fish in Bangladesh. *Sustainable Production and Consumption*, 27, 115–127.
- [16] Hossain, M. A. R. (2014). An overview of fisheries sector of Bangladesh. *Research in Agriculture Livestock and Fisheries*, 1(1): 109–126.
- [17] Islam, M. F., Rahman, M. S., & Sharker, M. R. (2021). A study on fish marketing system in Jamalpur, Bangladesh. *International Journal of Natural and Social Sciences*, 8(2), 1–7.
- [18] Islam, M. A., Rahman, S. M., Rabbani, A. G., Shah, M. M. R. & Rahman, S. M. A. (2007). Fish marketing in some local markets of Chuadanga district of Bangladesh. *Khulna University Studies*, 8(2): 239–244.
- [19] Khondoker, S., Hossain, M. L., & Moni, K. A. H. (2014). Wetland management in Bangladesh: A study on Beel Bakar. *Agriculture, Forestry and Fisheries*, 3, 320–328.
- [20] Mazid, M. A. (2002). Development of fisheries in Bangladesh: Plans and strategies for income generation and poverty alleviation. 176pp.
- [21] Rahman, M. N., & Islam, A. R. M. T. (2020). Consumer fish consumption preferences and contributing factors: empirical evidence from Rangpur city corporation, Bangladesh. *Heliyon*, 6(12), 1–8.
- [22] Shamsuzzaman, M. M., Islam, M. M., Tania, N. J., Al–Mamun, M. A., Barman, P. P., & Xu, X. (2017). Fisheries resources of Bangladesh: Present status and future direction. *Aquaculture and Fisheries*, 2(4), 145–156.
- [23] Shamsuzzaman, M. M., Mozumder, M. M. H., Mitu, S. J., Ahamad, A. F., & Bhuian, M. S. (2020). The economic contribution of fish and fish trade in Bangladesh. *Aquaculture and Fisheries*, 5(4), 174–181.