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Study On Marketing And Consumer Buying Behaviour Of Inland Fish (*Catla*  
*Catla*) In Darjeeling District Of West Bengal

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**Abstract**

Both capture and culture fisheries are a part of the inland fisheries of India. Until the middle of the 1980s, capture fisheries accounted for the majority of inland fish production. But due to the overpopulation of water management systems, indiscriminate fishing, and habitat destruction, fish productivity in natural waters such as rivers, lakes, canals, etc. has been dropping. Due to factors like resource depletion and other factors, aquaculture is increasingly being recognised for its adaptability and promise as a competitive alternative to capture fisheries. The majority of responders to the study had small farms, followed by medium and large farms. The majority of responders are young, followed by older and middle-aged people, according to the data. The research has shown that there In the research area, there were more male respondents than female respondents. It was discovered that the majority of the overall sample belonged to the SC/ST category, followed by the general and OBC categories. In the category of religion, it was discovered that Hindus made up the majority of respondents, followed by Muslims and Christians. In contrast to respondents who lived in nuclear families, it was discovered during the study that the majority of respondents lived in joint families. 19% of respondents were illiterate, whereas the largest number of respondents was literate. Three marketing channels have been identified as being active in the Darjeeling district's marketing of the inland fish *Catla*. The producer-wholesaler-retailer-consumer channel, Channel III, is the most popular of the three, followed by Channel II,— Wholesaler-Retailer-Consumer is the next channel, followed by Producer-Consumer on channel I, then Wholesaler-Retailer-Consumer on channel II. It has also been discovered that a variety of factors, including physical characteristics, preferred weight, shopkeeper reputation, and pricing, influence consumer purchase behaviour. Eight marketing restrictions that have an impact on the selling of *Catla* fish in the Darjeeling area of West Bengal are revealed to be High commission fees scored first in responses from 105 respondents, followed by frequent price changes ranked second in responses from 103 respondents. Lack of proper market infrastructure (90 respondents response ranked IV), Lack of Knowledge of New Technologies (87 respondents response ranked V), High Transportation Costs (95 respondents response ranked III), Lack of Knowledge of Government Schemes and Subsidies (85 respondents response ranked IV), and Lack of Awareness of New Technologies (87 respondents response ranked V) 82 respondents ranked VIII, 83 respondents scored VII for a lack of amenities and facilities in market subsidies, and 83 respondents ranked VI for a lack of cooperative marketing society at the village level.

**Introduction**

Fisheries refer to the industry or activity of catching, processing, and selling fish and other aquatic organisms. This industry plays a crucial role in the global economy as it provides food, employment, and income for millions of people worldwide. However, the management and sustainability of fisheries have become a major concern due to overfishing, climate change, and other environmental factors. Overfishing is one of the biggest challenges facing fisheries today. It occurs when fish are caught faster than they can reproduce, leading to a decline in their populations. This has resulted in the depletion of many fish species, and in some cases, the collapse of entire fisheries. Overfishing also has significant ecological and economic consequences, as it disrupts food webs, reduces biodiversity, and threatens the livelihoods of fishing communities. To address overfishing and promote sustainable fisheries, various measures have been put in place by governments, international organizations, and the fishing industry. These include implementing fishing quotas and size limits, establishing marine protected areas, and promoting the use of more selective fishing methods. In addition, there is a growing

trend towards the adoption of certification schemes and eco-labelling, which help consumers to identify and choose sustainable seafood products. Another challenge facing fisheries is climate change. Rising sea temperatures, ocean acidification, and changes in ocean currents and weather patterns are affecting the distribution and abundance of fish species. This is particularly evident in tropical regions, where coral reefs are being damaged and fish populations are declining. To mitigate the impacts of climate change on fisheries, efforts are underway to reduce greenhouse gas emissions, promote adaptation measures, and develop new technologies and fishing practices. Despite these challenges, there are also opportunities for the fisheries industry to thrive in a sustainable and responsible manner. For example, aquaculture, or the farming of fish and other aquatic organisms, has emerged as a rapidly growing sector. This can help to reduce pressure on wild fish stocks, provide employment opportunities, and contribute to food security. In addition, the growing demand for sustainable seafood products presents a market opportunity for fishermen and seafood companies that adopt responsible fishing practices.

Our economy's expanding component is the fishing industry. The fishing sector's role in increasing the availability of food, creating employment opportunities, improving nutritional standards, and generating foreign exchange has grown in importance. A significant impact was made on the country's fisheries structure by increasing urbanization, globalization, and fast shifting social structures. By generating jobs, increasing income, gaining foreign cash, and ensuring food and nutrition security, the fisheries sector has been a significant contributor to the Indian economy. For a sizable portion of the nation's economically disadvantaged people, particularly in the coastal regions, this industry also serves as their primary source of income. Agriculture and related industries' percentage of GDP is steadily decreasing. It has been noted that the agricultural sector is progressively diversifying towards high value enterprises including fisheries. It is evident from the contribution of fisheries sector to the G.D.P.,

Fisheries' contribution to agricultural G.D.P. expanded significantly over this time span, rising from 0.84 to 4.19 percent. In every decade, the fishing industry has grown more quickly than the agriculture industry. The increasing fish production indicates that the fisheries industry is thriving and contributing to the country's economy is expanding. Fish growers and more than 6 million fishermen are entirely dependent on Indians rely on fishing for their livelihood.

India now produces more fish than any other country in the world, with a share of 4.5 percent in 2020–21 compared to 2.6% in the 1960–1970 period. The export of fishery products generated revenues of Rs. 6,443.00 crores, while the sector of fishing contributes 1.4% to the country's gross domestic product. India is home to having the distinction of being the second-largest producer of inland fish and the sixth-largest fish producer overall.

Fish is one of the most important items of food all over the world. Due to the higher growth rate of population in India and increasing problem of malnutrition and under nutrition, considerable attention needs to be given to an rich the biological value of different food item.

Fish contains 71.9% moisture, 11 - 24% protein, 10.3-17.6% fat and 1.23% ash. Besides, this the fish is an great source of minerals and vitamins specially of vitamin 'A' & 'D'. In the balance diet, the availability of protein is easily available in comparison to food products. In different food products availability of protein.

By using these six species combinations the natural food available in the different strata of the water column in the fish ponds is properly utilized. The fish Catla is a zoo plankton feeder of the surface and Rohu of the mid column, mrigal feeds mainly from the bottom. By bringing in the other three exotic fishes, the utilization had become more effective. The silver carp feeds mainly on phytoplankton. The grass carp feeds upon aquatic weeds and grass, whereas common carp is an omnivorous.

**Table 1.1** Contribution of Indian fish market to World's Fish Production in Selected Years (In MMT)

1997	120.41	95.45	24.96	5.39	2.88	2.51
1998	114.14	88.28	25.87	5.28	2.68	2.60
1999	122.32	94.61	27.71	5.61	2.78	2.83
2000	125.94	96.88	29.06	5.61	2.76	2.85
2001	125.36	95.00	30.36	5.90	2.80	3.09
2002	127.83	96.17	31.67	5.93	2.96	2.96
2003	127.20	93.69	33.51	6.03	2.96	3.07
2004	134.65	98.77	35.88	6.19	2.88	3.31
2005	136.78	98.25	38.53	6.66	2.87	3.79
2006	137.51	96.43	41.08	7.03	3.04	3.99
2007	140.69	97.26	43.42	6.97	3.09	3.88

2008	143.02	96.78	46.24	7.95	3.36	4.60
2009	145.74	97.19	48.55	7.86	3.29	4.57
2010	147.99	95.87	52.13	8.48	3.28	5.19
2011	154.00	104.70	49.30	8.88	3.27	5.61
2012	156.00	102.80	53.20	9.24	3.32	5.92
2013	160.80	104.80	56.00	9.78	3.44	6.34
2014	164.90	106.70	58.20	10.46	3.57	6.89
2015	168.70	108.70	60.00	10.82	3.64	7.18
2016	166.20	106.80	59.40	11.43	3.63	7.81
2017	172.70	111.20	61.50	12.59	3.69	8.90
2018	178.50	115.20	63.30	13.76	4.18	9.58
<b>CAGR (%)</b>	<b>4.11</b>	<b>2.98</b>	<b>8.24</b>	<b>6.52</b>	<b>4.09</b>	<b>9.04</b>

Source: Handbook on Fisheries Statistics, 2018 and FAO (2020) Report on "The State of World Fisheries and Aquaculture 2020

**Table 1.2** Major Countries for Marine Capture Fisheries during 2012 to 2020 (In MMT)

Sr.No.	Country	2014	2015	2016	2017	2018	2019	2020
1	China	13.87	13.97	14.81	15.31	15.25	13.19	12.68
2	Indonesia	5.42	5.62	6.02	6.22	6.11	6.31	6.71
3	USA	5.11	5.12	4.95	5.02	4.90	5.02	4.72
4	Russian Federation	4.07	4.09	4.00	4.17	4.47	4.59	4.84
5	Peru	4.81	5.83	3.55	4.79	3.77	0.83	0.96
6	India	3.40	3.42	3.42	3.50	3.60	3.94	3.62
7	Japan	3.61	3.62	3.63	3.42	3.17	3.18	3.1
8	Vietnam	2.42	2.61	2.71	2.61	2.68	3.15	3.19
9	Norway	2.15	2.08	2.30	2.29	2.03	2.38	2.49
10	Philippines	2.13	2.13	2.14	1.95	1.87	1.72	1.89
11	Malaysia	1.47	1.48	1.46	1.49	1.57	1.47	1.45
12	Chile	2.57	1.77	2.18	1.79	1.50	1.92	2.12
13	Morocco	1.16	1.24	1.35	1.35	1.43	1.36	1.36
14	Korea	1.66	1.59	1.72	1.64	1.38	1.35	1.33
15	Thailand	1.61	1.61	1.56	1.32	1.34	1.31	1.51
16	Mexico	1.47	1.50	1.40	1.32	1.31	1.46	1.47
17	Myanmar	2.33	2.48	2.70	1.11	1.19	1.27	1.14
18	Iceland	1.45	1.37	1.08	1.32	1.07	1.18	1.26
19	Spain	-	0.98	1.10	0.97	0.91	0.94	0.92
20	Canada	-	0.82	0.84	0.82	0.83	0.81	0.78
21	Taiwan	-	0.93	1.07	0.99	0.75	0.75	0.81
22	Argentina	-	0.86	0.82	0.80	0.74	0.81	0.82
23	Ecuador	-	0.51	0.66	0.64	0.72	0.69	0.72
24	UK	-	0.63	0.75	0.65	0.70	-	-
25	Denmark	-	0.67	0.75	0.87	0.67	-	-
26	Iran	-	-	-	-	-	0.78	0.95
27	Mauritania	-	-	-	-	-	0.9	0.79
28	<b>Total of the Above country</b>	60.71	66.92	66.95	66.34	63.94	64.6	67.83
29	<b>Total Other Countries</b>	19.00	14.04	14.60	14.91	15.34	16.61	16.58
30	<b>World Total</b>	79.71	80.96	81.55	81.25	79.28	81.21	84.41

Source: Handbook on Fisheries Statistics, 2018 and FAO (2020) Report on "The State of World Fisheries and Aquaculture 2020

**INLAND FISHERIES:**

Both capture and culture fisheries are a part of India's interior fisheries. Up until the mid-1980s, capture fisheries were the main source of inland fish output. However, the production of fish from natural waters such as rivers, lakes, canals, etc. has been on the decline, mostly because of the abundance of water management systems destructive fishing practices and habitat loss. Depleting resources, among other factors, have risen realizing the adaptability and promise of aquaculture as a practical and affordable alternative to capture fisheries. The productivity of inland aquaculture increased from 0.51 to 2.38 over the last 15 years. Million tons, however it has decreased for inland catch fisheries from about 0.59 to 0.40 million tons. Additionally, aquaculture's percentage share significantly expanded from 46.36 to 85.65 percent. It is mainly as a result of a phenomenal 4.5fold increase in freshwater aquaculture. its proportion of all inland fish .Additionally, production has increased from 27.95 to 66.4 percent. However, it has more potential for improvement. production of fish..

The nation has abundant and diverse resources, including a river biological legacy and a rich biodiversity. The inland fisheries industry's share has increased from 29% in 1950–1951 to over 49% in 2020–2022, demonstrating growing contributions from the inland sector to fish production overall. Shrimps in brackish water and large Indian carps in fresh water aquaculture .The amount and value of the inland aquaculture sector have mostly been influenced by aquaculture. Fish from 7.5 lakh tonnes in 2001–2003 to 56.6 lakh tonnes in 2022, production in India has continuously increased by 2023. Up to 1990–1991, marine fisheries continued to be the dominant provider its share of global fish production .By 1960–1961, it was over 75%, but it fell sharply to 61.93 percent in 1970- 71. Since then time, it had been nearly consistent until 1990–1991. Fish production structure saw significant modifications in the 1990s. In 1999–2000, the proportion of inland fisheries rose sharply, reaching 50%.Due to a slowdown in the expansion of marine fisheries and a policy change in favor of inland farmed fisheries, particularly aquaculture, these changes were brought about..

India's inland capture fishing resources, which include 45,000 km of rivers, 1,26,334 km of canals, 2.7 million hectares of estuaries, and 2.05 million hectares of reservoirs, are widely renowned for their diversity and production potential. The current fish yield obtained from all of these resources, however, is significantly below the potential. There are numerous oxbow lakes (mauns, chaur, jheels, and bheels) in the floodplain wetland area mainly in the states of Assam, West Bengal, Bihar, and Eastern Uttar Pradesh, as they are known locally occupy a significant role in India's inland fisheries resources due to both their size and their capacity for output..

These bodies of water are nutrient-rich, as evidenced by their high soil nitrogen and phosphorus concentrations and organic carbon content. From the current average production of 200 Kg/ha/year, the yields of flood-prone wetlands can be raised to an average of one tonne of fish per hectare. The parties with a stake in the supply chain of Fishermen, mandali/mandi, wholesalers, dealers, and retailers are all involved in the catch and marketing of inland fish consumer. In some regions, the'mandali/Mandi' (fishermen co-operative group) purchases the inland catch. The mandali/mandi' and the wholesale vendors have an annual contract. Fish are gathered by wholesalers from and deliver it to the major markets, primarily In north India and West Bengal are connected via railways or cold vans. In other instances, it was noted that the majority of small fisherman sold their catch at the neighborhood market or in the markets of adjacent villages.

Small and marginal farms make up the majority of farms in India. These farms typically exhibit the following traits: unemployment of human labor, a lack of capital, and poorer agricultural income output. Even it has not been possible for contemporary agricultural technology to generate a respectable quantity of income and jobs available on these farms. The potential for increasing earnings and employment in the future appears to be very large constrained as a result of increased land holding subdivision. These considerations have led to the small and marginal farmers been trying to find the other possible sources of income and employment, because of which the little and marginal farmers typically turn to side jobs like dairy farming, pig farming, and chicken farming gardening, etc. Some of these businesses have been continued over time and have been adopted by the farmers. Despite the fact that fish farming has recently begun thanks to government backing and popularization measures therefore there isn't a lot of empirical data accessible for this business.

**Table 1.3** Fish Production in India

Year	Fish Production		
	Marine	Inland	Total
1990-1991	2300	1536	3836
1991-1992	2447	1710	4157
1992-1993	2576	1789	4365
1993-1994	2649	1995	4644
1994-1995	2692	2097	4789

1995-1996	2707	2242	4949
1996-1997	2967	2381	5348
1997-1998	2950	2438	5388
1998-1999	2696	2602	5298
1999-2000	2852	2823	5675
2000-2001	2811	2845	5656
2001-2002	2830	3126	5956
2002-2003	2990	3210	6200
2003-2004	2941	3458	6399
2004-2005	2779	3526	6305
2005-2006	2816	3756	6572
2006-2007	3024	3845	6869
2007-2008	2920	4207	7127
2008-2009	2978	4638	7616
2009-2010	3104	4894	7998
2010-2011	3250	4981	8231
2011-2012	3372	5294	8666
2012-2013	3321	5719	9040
2013-2014	3443	6136	9579
2014-2015	3569	6691	10260
2015-2016	3600	7162	10762
2016-2017	3625	7806	11431
2017-2018	3688	8902	12590
2018-2019	4176	9582	13758
<b>CAGR (%)</b>	<b>1.48</b>	<b>6.19</b>	<b>4.05</b>

*Source: Handbook on Fisheries Statistics, 2018 and MPEDA website*

#### **Inland Scheme:**

Inland aquaculture has progressed with proper Research and Development efforts of "Central Inland Fisheries Research Institute Barrackpur" (C.I.F.R.I.) Orissa in developing induced breeding of carp seed production, composite fish culture reservoir management. It is extending to the technology through All India Co-ordinated Projects by the Government initiated massive development Programme. In West Bengal 4.32 lacks ha. water area is available, where fish cultivation is taken into consideration. Out of mentioned area, large and medium ponds are in 1.38 lacks ha., natural lake 1.3 lacks ha. and small ponds in rural area is 1.61 lacks ha. Large and medium ponds utilized for fish culture are 90.5% natural lake 3.7% and ponds of rural area is covered by 6.8%

The fish production in West Bengal was 1.59 lacks ton in 1996 - 1997 and it was increased by 15.51 lacks ton in 2018 -2020. In five year plan the production is supposed to be increased by 3.7 lakh ton. In fish production West Bengal stands on second place in India.

#### **About Catla Fish:**

Freshwater fish native to South Asia, mainly India, Bangladesh, and Nepal, are known as catla fish or Indian carp. It is a common food fish that is fished from rivers and estuaries as well as widely cultivated in ponds, lakes, and reservoirs. Fast-growing catla fish can grow to a height of one meter length and up to 40 kg in weight. It features a bright silver body, a skull that is somewhat concave, and a big mouth with teeth lips that are noticeable .It is an omnivore fish that consumes both algae and other forms of plant and animal life, Small fish, insects, and zooplankton.

The delicate, sweet flesh of catla fish, which is strong in protein and low in fat, is prized in South Asian cuisine. A number of methods, such as steaming, frying, grilling, and currying, are frequently used to prepare it. Traditional cuisines like fish biryani and fish curry also use it. A crucial fish is catla fish species for aquaculture because it is simple to breed, quickly grows, and adapts to a variety of environmental conditions. A tough fish, it can withstand low oxygen levels and high stocking densities of late in recent years, the demand for Catla fish has increased in international markets, particularly in the Middle East Europe, the East, and North America.

#### **Market Demand of Inland Fish (Catla Catla) in West Bengal:**

Catla fish is a popular fish species in West Bengal, a state in eastern India that has a rich tradition of freshwater fish farming and fishing. West Bengal is home to several major rivers, including the Ganges,

Brahmaputra, and Hooghly, which provide ideal habitats for Catla fish. Catla fish are widely raised in West Bengal in freshwater cages and pens as well as ponds, lakes, and reservoirs. To preserve a healthy habitat, the fish are generally raised in polyculture alongside other species like Rohu and Mrigal to increase productivity.

Especially in rural West Bengal, catla fish is a significant source of food and income for many people areas. It can be eaten fresh, dried, smoked, or tinned and is incorporated into a number of classic cuisines, including fish biryani, fish curry, and fish fries. Additionally, the fish is exported outside of India and to other countries. markets, where the demand for premium freshwater fish is rising. Despite its importance, Catla fish populations in West Bengal are under threat from overfishing, habitat degradation, and pollution. To ensure the sustainability of Catla fish and other freshwater fish species, the government of West Bengal has implemented various measures to regulate fishing and aquaculture activities. These include the establishment of fish sanctuaries, the promotion of responsible fishing practices, and the development of sustainable aquaculture technologies. In addition, there are ongoing efforts to raise awareness about the importance of preserving freshwater ecosystems and to encourage the adoption of sustainable fish farming practices.

### **Statement Of Problems:**

Being the leading fish market in the world, the inland fish producer and the marketer in the country face some major problems. Due of its extreme perishability, fish marketing is given extra weight.

To keep fish fresh for a longer period of time, it needs adequate roads and quick transport facilities, the right container, ice, and cold storage, as well as the right agency (or agencies), because fishermen are often underpaid and disorganized and cannot reach consumers. The fisherman encounter greater challenges because these amenities frequently fall short of their expectations. Therefore, “**Study on marketing and consumer buying behaviour of INLAND FISH (Catla catla) in DARJEELING district of West Bengal**” focus on confined to the problems during marketing and trade of catla fish.

### **Justification Of The Study:**

It is essential to have the comprehensive data of consumer behaviour to obtain the correct solution and also in helping the fishermen in decision making. The present study is confined to Darjelling district. So, the finding of present study may be useful to the fishermen of Darjelling district.

### **Objectives:**

- To evaluate the socioeconomic situation of inland fisherman in the research area's various farm size groups.
- Recognizing the various inland fish marketing channels now in use (Catla).
- To determine consumer purchasing habits.
- To examine the pricing differential, the producer's share of the consumer rupee, and marketing effectiveness in various marketing avenue for the research field.
- To assess various marketing challenges associated with inland fish (Catla catla)

### **Review Of Literature:**

**Das et al. (2013)** In the selected fish markets of Tripura, it was determined that the marketing structure, marketing channels, producer's share, marketing margins, and marketing efficiency. The study has also determined the distribution routes for both locally produced fish and fish imported from other states. According to research, the marketing efficiencies might range from 51% to 88% depending on how long the marketing channel is. Locally farmed fish has a higher marketing efficiency than fish imported from other states. The percentage of the consumer's rupee that goes to the fisher varies depending on the marketing channel and is higher for locally produced and marketed fish. The study has identified the marketing challenges faced by the fishermen and has made some recommendations for how to make fish selling in Tripura more manageable and regulated.

**Rahaman et al. (2013)** showed that as purchasing power and standards of life rise, so does the demand for fish in West Bengal's rural districts. Despite the state's significant development in fish production, the supply in rural areas is decreasing as a result of things like rural competition, litigation, theft, breaking up joint families, etc. The traditional fish farming system has been unable to keep up with the rising demand, leading to an undue reliance on commercially controlled, organised fish production units, locally referred to as "bheries," and on the supply from other fish-producing states.

**Abhay (2016)** the fishermen were economically weak and the bulk of them lived below the poverty line as a result of a long chain of middlemen exploiting them in many ways. Seasonal fish catches were species-specific and need special nets, which fishermen frequently lacked.

**K.K. Singh and Aiab Singh (2017)** The paper aims to analyses the prospects and profitability of fisheries in Eastern Uttar Pradesh. For the purpose, multistage random sampling was applied for selection of district, village, and fish producers. An appropriate number of intermediaries were also selected from the prevailing fish market, i.e., Faizabad fish mandi study the marketing practices of fishes. Faizabad district enjoying higher acreage under inland fisheries was purposively selected. A list of all the fish growing of the selected district was prepared and five villages falling in the vicinity of the selected market were selected for

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the study. A list of all fish producers of the selected villages was prepared and 25 per cent fish producers were randomly selected for the detailed study. The study revealed that per hectare annual expenditure in raising fish worked out of Rs. 33,602 and per hectare fish production was recorded at 3,200 kg. On an average, selling price was Rs. 35 per kg and gross and net income obtained were Rs. 1,12,000 and Rs. 68,398 per hectare. It was observed that farmers were earning Rs. 6,538 per month from 1 ha. of fish pond. Channel 1 (producer- consumer) was found to be the most efficient of marketing of fish. The study concluded that (farmers of eastern Uttar Pradesh can uplift their standard of living by adopting fisheries enterprise in their business planning. This study sheds light on the fact that the fisheries enterprise can be lucrative and prospective enterprise for the farmers of Eastern Uttar Pradesh.

**Mandal et al. (2018)** suggested that increase the awareness of consumer regarding the usefulness of fish as source of nutrition and the changing demands for newer and convenient. The fund (FAIDF) is generated for schemes under rural development for promoting women and weaker sections in local fish markets. Also, to improve the facilities like creating and maintaining infrastructure like launching cold storage at major collection points, improved road access to fish catching centers (ponds, rivers etc.), from the main markets, ice factories, etc.

**Pandya and Patel. (2018)** due to a lack of training facilities, time at the village level, and technical assistance in disorganised growth operations, inland fishermen experienced a lack of significant expansion. This was the result of an undeveloped cooperative organisation. Leading inland fishermen lacked experience in marketing, maintaining water levels in fish ponds, timely seed supply, fish poaching, and maintaining transport facilities.

**S.N. Singh, D.P. Malik and Dalip Kumar (2018)** A study was undertaken in Haryana state with the following objectives: (i) to analyse price spread, marketing costs and margins in various marketing channels, (ii) to calculate marketing efficiency of various marketing channels and (iii) to study different marketing patterns of fish. The relevant information was collected from 60 fish farmers and 30 wholesalers and 30 retailers through personal interviews from the selected Hisar and Gurgaoan districts. For the estimation of pricing spread, marketing pattern, marketing costs, and margins, tabular analysis was used. Shepherd's formula was used to determine the marketing effectiveness of various marketing channels. The study's findings indicate that the channel I served as the primary fish marketing channel in the Hisar and Gurgann districts. In the Hisar and Gurgaoan districts, the producer received 60.67 and 59.80% of the consumer's rupee for channel I and 85.33 and 87.14% of the consumer's rupee for channel II, respectively. This was due to channel II's lack of a market intermediary and the direct sale of produce from producers to consumers. The wholesaler's margin and the retailer's margin together made up the greatest expenses in channel I, which were 10.12 and 10.75% in the Hisar district and 10.35 and 12.05% in the Gurgaoan district, respectively. For channel II, Hisar and Gurgaoan districts' marketing effectiveness (5.81 and 6.78) was better than that of channel I. As a result, channel II was more effective due to its lower marketing costs, but due to lesser demand, marketing of fish through this channel was only done on a small scale. Instead, the majority of the fish was sold to wholesalers through channel I at Delhi Market before being sold directly to customers. The peak season, which lasted from October through December, saw the greatest sales of produce. It is necessary to create adequate marketing, funding, storage, and seed availability in the state to popularize fish farming on a large scale and increase income and employment of the rural masses.

**Prasad et al. (2020)** It was discovered that the fish market chain, which extends from the producer to the retailers through a variety of intermediaries, is affected by the fish market structure, species, quality, size, and weight of the fish. However, the cost of fish increased and fluctuated per kilogramme depending on the species, size, and weight of the fish.

**Godhuli et al. (2021)** The local population's desire for fish food is reflected in the local fish market. The presence of 46% marine fish and 54% freshwater fish in Khargapur's fish markets shows that many populations prefer marine fish. Marketing has an impact on people's socioeconomic well-being and means of subsistence. Many people in the town of Kharagpur who are connected to the fish marketing channel depend on the fish markets for their livelihood. For the commercial application and enhancement of the current fish marketing system in Kharagpur, government and public private intervention is required. As a result, some actions must be taken to improve the socioeconomic situation of those who work in the fish industry, including: improving sanitation, hygienic conditions, drainage, washing facilities, and enough auction locations; paying adequate attention to personal hygiene; developing the current fish market infrastructure; modernising wholesaling facilities; providing financial and technical assistance; and implementing training programmes.

#### **Research Methodology:**

#### **Materials and Methods:**

The study was conducted in district of West Bengal, one of the most important district in terms of area and production inland fish (*Catla Catla*). From the district one block Matigara was selected on the randomly basis of highest area under inland fish catla consumer. 5% villages was selected from Matigara block, randomly. For each of the chosen localities, a combined list of all inland fish catla sellers and consumers was created. The size of the respondents' operational landholdings was then used to categorize them. The needed primary information was

gathered from a chosen group of farmers for the agrarian year 2022–2023. The necessary secondary information was obtained from a variety of publicly available government records, books, block development offices, reports, webpages and other sources that are linked. Consumer preferences and behavior were discovered through inland fish catla merchant and inland fish catla consumer interviews.

#### **Sampling Design:**

The study was confined to Darjeeling district of West Bengal, The district comprises of Matigara block of the district was selected for study from each blocks. Inland fish Catla seller and Inland Fish catla consumer potential village was selected in consultation with one blockagriculture official Darjeeling district and from each village 5% respondents were selected. Thus total randomly selected respondents of different size group was selected for detail investigation.

In order to choose the participants for the current study, a multistage stratified random sampling approach was used the sample's final measurement unit..

Sr . No .	Stages	Particulars
1 .	First Stage	Selection of District
2 .	Second Stage	Selection of Block
3 .	Third Stage	Selection of Villages
4 .	Fourth Stage	Selection of Respondents
5 .	Fifth Stage	Selection of Market & Market Functionaries

#### **Selection of District:**

Darjeeling is one of the districts of West Bengal state of India. This district was selected purposively for present study because in Darjeeling, bio flock and pond fisheries are grown in large area and also large quantity of fish traded daily in fish market/mandi.

Darjeeling district is located in the Indian state of West Bengal and is known for its natural beauty, tea plantations,



Source: From Map of India

and cultural diversity. Here are some quick facts about Darjeeling district:

**Fig 3.1** Map of Darjeeling District.

Area and Location description of Darjeeling District





Darjeeling district is located in the Indian state of West Bengal. The district is spread over an area of approximately 3,149 square kilometers. Darjeeling district is known for its scenic beauty and is a popular tourist destination. The district is bordered by the state of Sikkim to the north, Bhutan to the east, Nepal to the west, and the Indian state of Bihar to the south. The district is divided into two sub-divisions - Darjeeling and Kurseong. The administrative headquarters of the district is located in Darjeeling town. The district is primarily mountainous and is home to several famous peaks, including Kanchenjunga, the third-highest mountain in the world. The district is also known for its tea plantations, which produce some of the finest tea in the world.

#### **Geography:**

Geographically, Darjeeling district is situated in the foothills of the Himalayas, and the district's terrain is hilly and rugged, with several rivers and streams flowing through it. The district shares its border with Sikkim in the north, Bhutan in the east, Nepal in the west, and the plains of Siliguri in the south.

The district is further divided into two distinct geographical regions: the hills and the plains. The hills, which cover most of the district, are characterized by steep slopes, deep valleys, and dense forests. The plains, which are located in the southern part of the district, are relatively flat and are mainly used for agriculture.

The district is home to several important rivers, including the Teesta, Rangeet, and Mahananda. These rivers provide water for irrigation, hydroelectric power, and other purposes. The district also has several important lakes, including the Senchal Lake and the Mirik Lake. Darjeeling district is known for its rich biodiversity, and it is home to several important wildlife sanctuaries, including the Singalila National Park, the Neora Valley National Park, and the Mahananda Wildlife Sanctuary. These sanctuaries are home to several rare and endangered species, including the red pandas, the Himalayan black bear, and the clouded leopard.

#### **Climate:**

Darjeeling district has a humid subtropical climate with cool winters and mild summers. The district experiences three distinct seasons - summer, monsoon, and winter. Summer in Darjeeling district lasts from March to May, with temperatures ranging from 10°C to 25°C. The weather is generally pleasant, with clear skies and occasional showers. Monsoon season in Darjeeling district starts in June and lasts until September. During this season, the district receives heavy rainfall, which can lead to landslides and other natural disasters. The average rainfall in Darjeeling district is around 3,500 mm. Winter in Darjeeling district starts in December and lasts until February. During this season, temperatures can drop to as low as 0°C, especially at higher elevations. The weather is generally dry and sunny during this time, with occasional fog and mist. Overall, Darjeeling district experiences a mild and pleasant climate throughout the year, with temperatures ranging from 0°C in winter to 25°C in summer. The monsoon season brings heavy rainfall, which is essential for the growth of tea and other crops in the district. However, the district is also prone to landslides and other natural disasters during this time.

#### **Demography:**

Darjeeling district is a culturally diverse district in the Indian state of West Bengal. As of 2021, the estimated population of the district is around 18,06,000 people. The district has a mix of different ethnic and linguistic communities. The major ethnic groups in the district are Nepali, Bengali, Lepcha, Bhutia, and Tibetan. The Nepali-speaking community is the largest community in the district and constitutes around 56% of the total population.

The literacy rate in the district is relatively high, with an overall literacy rate of around 82%. The male literacy rate is higher than the female literacy rate, with around 87% of men and around 76% of women being literate.

In terms of religion, the district is predominantly Hindu, with around 56% of the population practicing Hinduism. Other major religions in the district include Buddhism, Christianity, and Islam.

#### **Economy:**

The economy of Darjeeling district is largely based on agriculture, tea cultivation, tourism, and the service sector. Tea cultivation is a major industry in the district, and Darjeeling tea is famous worldwide for its distinct flavor and aroma. The district is home to several tea estates, and tea production is a significant contributor to the local economy. Agriculture is another important sector in the district, with crops like maize, paddy, wheat, and cardamom being grown in the region. The district is also known for its horticulture, with several fruits such as oranges, apples, and peaches being grown in the district.

Tourism is a significant contributor to the district's economy, with the district attracting a large number of tourists every year due to its scenic beauty, tea plantations, and historical sites. The district is home to several tourist attractions such as the Darjeeling Himalayan Railway, the Tiger Hill, the Batasia Loop, and the Rock Garden.

The service sector, which includes banking, healthcare, education, and other services, is also a significant contributor to the district's economy. The district has several educational institutions, including schools, colleges, and universities, which attract students from all over the region.

In recent years, the district has seen some growth in industries such as information technology and biotechnology, with the state government setting up several IT parks and biotech parks in the region.

#### **Agriculture:**

**Abhilash Jha**

Agriculture is an important sector in Darjeeling district, and the region is known for its horticulture, tea cultivation, and vegetable farming. The topography of the region, with its hilly terrain, makes agriculture a challenging task, but the farmers of the region have adapted to the conditions and have been successful in growing a variety of crops.

Some of the major crops grown in the district include:

**Tea:** Darjeeling tea is world-famous for its distinct flavor and aroma. The district is home to several tea estates, and tea cultivation is a major contributor to the local economy.

**Maize and paddy:** Maize and paddy are the primary food crops grown in the district. These crops are grown on terraced fields, and the yield is highly dependent on the weather conditions.

**Horticulture:** The district is known for its horticulture, and several fruits such as pineapple, oranges, apples, and peaches are grown in the region. The district also has several nurseries that supply plants and flowers to other parts of the country.

**Ginger:** Ginger is another cash crop grown in the district and is mainly cultivated in the lower altitudes.

**Vegetables:** Vegetables like cauliflower, cabbage, tomato, potato, and radish are also grown in the district, and these are sold in the local markets. Overall, agriculture is an important sector in Darjeeling district, and the farmers of the region have adapted to the challenging conditions to grow a variety of crops. Tea cultivation is the major industry, and horticulture and vegetable farming also plays a significant role in the local economy. Selection of Block

In the district, there were 13 development blocks; Matigara block was purposefully chosen from among these because there were the most markets and mandis.

choosing the villages:

Four villages are randomly chosen for primary data collection out of the 78 that make up the Matigara development block.

**Table 3.1:** List of Selected Villages in Matigara block

Sr. No.	Village Name	Number of Selected Respondents
1	Bairatal	29
2	Baniakhari	30
3	Bara Gharia	29
4	Bara Mohan Singh	22

Selection of Respondents:

A list of every inland fish seller and inland fisherman (catla) from the chosen village was created. A list of households was used to pick respondents, and 30 percent of those respondents were chosen at random. Fishermen were then divided into three groups based on the amount of land they owned and the amount of fish they produced.

Small- <1500m<sup>2</sup> (Expected production 10 quintal)

Medium- 1500-3000m<sup>2</sup> (Expected production 15-18 quintal)

Large - >3000m<sup>2</sup> (Expected production above 20 quintal)

**Table 3.2:** Classification of Respondents:

District	Block	Village	Sample	Respondents			Total
				Small	Medium	Large	
Darjeeling	Marigara	Baniakhari	29	14	10	5	29
		Bara Gharia	30	15	10	5	30
		Bara Mohansingh	29	12	12	5	29
		Bairatal	22	13	5	4	22
<b>Total</b>			<b>110</b>	<b>54</b>	<b>37</b>	<b>19</b>	<b>110</b>

**Selection of Market and Market Functionaries:-**

**Selection of Market:**

Three prominent fish market mainly Siliguri mandi, Matigara bazar and Siliguri fish market were selected purposefully for data collection.

**Choosing market participants:**

With the aid of primary and secondary market offices, a list of all market functionaries, including wholesalers, retailers, fishermen, and others, was created. The market functionaries were then chosen for data collection regarding prices and other marketing costs in various marketing channels. 10% of market functionaries were chosen at random for this study. 50 market participants in total—10 wholesalers, 15 retailers, and 25

consumers—were chosen at random for the study.

### **Collection of Data and Method of Enquiry:**

#### **Primary Data:**

The data on marketing aspect were collected on well-structured schedule prepared in advanced and data collection was done using survey method. Several visits were made to collect correct information.

#### **Secondary Data:**

The secondary information was collected from the published sources available block headquarter and marketing office headquarters and various government sources including journals, review and internet.

**Period of Enquiry:** - To study was conducted in during the year 2022-2023 agricultural year.

: Analytical Tools:

#### **Mean formula:**

Data analysis will be done by using descriptive technique.

$$\text{Mean} = \frac{\text{of observation}}{\text{Number of observation}}$$

#### **Marketing margin:**

Similar to a profit margin, a marketing margin depicts the difference between the price a business pays for goods and the price its clients pay. Profit margin, on the other hand, is the portion of the final sale price that the seller keeps as profit, as opposed to marketing margin, which is the difference between cost to the seller and cost to the customer.

$$\text{Marketing margin} = \text{Product price} - \text{raw material}$$

#### **Marketing cost:**

All expenses incurred by the business to sell its goods and build its brand are categorised as marketing costs. These marketing expenditures or expenses cover things like fees associated with renaming products, promoting products, paying for inventories, distributing products, etc.

$$C = CF + CM_n + CM_1 + CM_2 + CM_3 + \dots$$

where C = the total cost of promoting the good or service

From the time the produce leaves the farm until it is sold, the producer must pay the costs  $CM_i$  is the expense incurred by the middleman in the purchase and sale of the good. Producer percentage of consumer dollars. The relationship between the producer's share and the fish producers' portion of the consumer's rupee is dynamic and liable to alter. The relationship between the producer's share and marketing effectiveness is favourable. Higher the producer's share greater would be the marketing efficiency or vice versa. This specifies the price received by the fish producer and indicates in percentage rupee paid by the consumers. It is estimated using the following formula

$$Fs = (Fp \div Cp) \times 100$$

Where,

$F_s$  = Farmer's share in consumer rupee (percentage)  $F_p$  = Farmer's net selling price  $C_p$  = Consumer's price

Prices spread

Price spread is defined as the discrepancy between the price paid by the consumer and the producer's net price for fish produce of equal amount. It is stated as a percentage of the cost to the consumer.

**Price Spread =  $\frac{\text{consumer price} - \text{net price of producer}}{\text{consumer price}} \times 100$**

#### **Marketing Efficiency:**

$$\text{MME} = \frac{FP}{MC + MM}$$

Where,

MME is modified measure of marketing efficiency

FP = Price received by farmers

MC = Marketing cost MM = Marketing margin

#### **Garrett Ranking:**

To find out the most significant factor which influences the respondents, garrett's ranking techniques was used.

$$\text{Percentage} = \frac{100(R_{ij} - 0.5)}{N_j}$$

Where,  $R_{ij}$  = rank given for  $i$ th item by  $j$ th individual  $N_j$  = Number of ranked by  $j$ th individual

#### **Results And Discussion:**

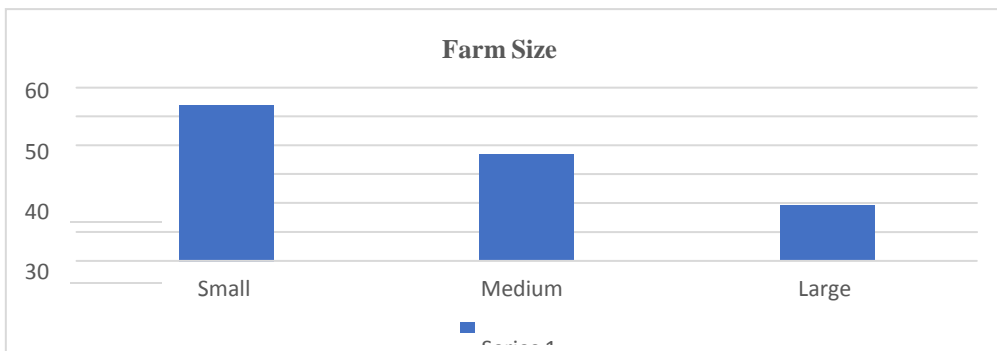
This chapter deals with the results and various aspect which came out during the study and are supported with a brief discussion on the findings of the study. The main focus of my study was evaluating the consumer buying behaviour, price spread, producer's share in consumer rupee and marketing efficiency marketing toward the inland fish (Catla) in the study area which could be helpful for the readers. The study was commenced strictly on the basis of the objectives chosen for the study. The data was collected, classified, analysed, interpreted, presented and discussed systematically.

Socio-economic status of inland fishermen in different size farm group in study area.

**:Farm Size:**

**Table 4.1 :** Distribution of respondents according to their farm size.

Sr. No.	Category	Frequency	Percentage
1.	Small	54	49.09
2.	Medium	37	33.63
3.	Large	19	17.27
<b>Total</b>		<b>110</b>	<b>100%</b>



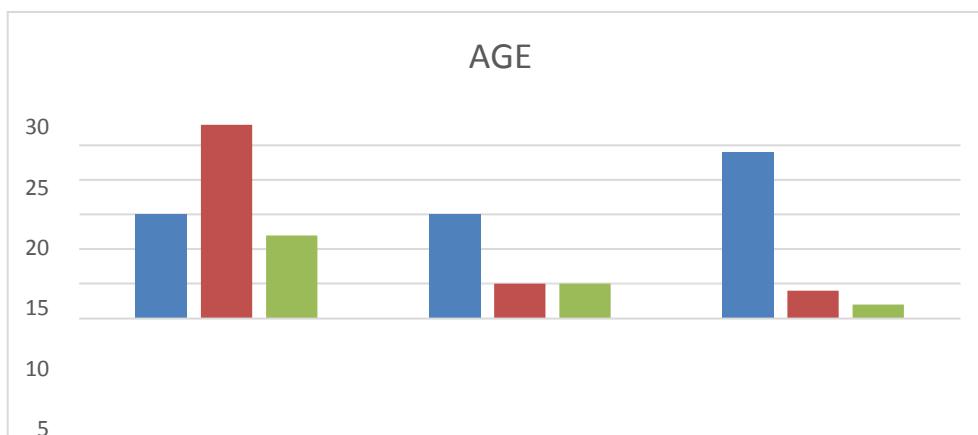
**Fig 4.1:** Graphical representation of respondents according to their farm size.

This reveals One of the key sociodemographic factors in this study is farm size. Farm size has a crucial association in market-related studies since it influences purchasing decisions. Farm size tends to draw different conclusions when purchasing as a result of the differences in their perception and socialisation. Out of the total of 110 respondents, 54 (49.09%) had small farms, 37 (33.63%) had medium-sized farms, and the remaining 19 (17.27%) had large farms.

**Age:**

**Table 4.2:** Distribution of respondents according to their age.

Sr. No.	Particulars	Small	Medium	Large	Total
1.	Young (20-35 years)	15	28	12	55 (50%)
2.	Middle (36-50 years)	15	5	5	25 (22.72%)
3.	Old (above 50 years)	24	4	2	30 (27.27%)
	<b>Total</b>	<b>54</b>	<b>37</b>	<b>19</b>	<b>110</b>



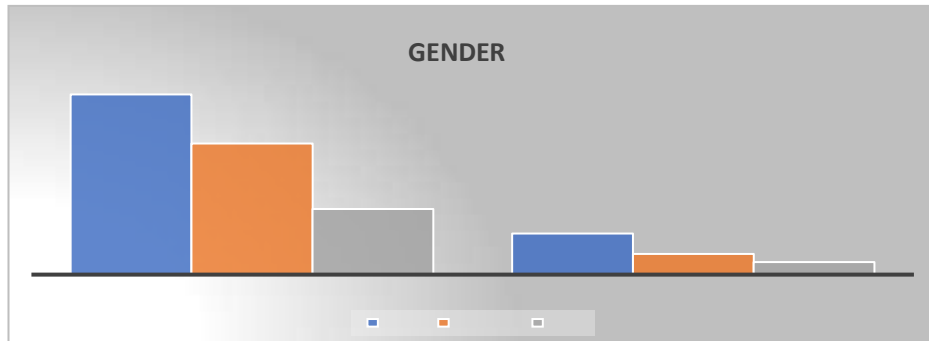
**Fig 4.2** Graphical representation of respondents according to their age

The information above demonstrates that age is one of the crucial sociodemographic parameters in this study. Because age impacts the physical and psychological aspects of the consumer, which in turn affects the consumer's purchasing behaviour, age is given considerable importance in market-related studies. According to this table, 55 (50%) respondents fall into the young age group, 25 (22.72%) respondents fall into the medium age group, and 30 (27.27%) respondents fall into the senior age group. As a result, the youngest age group makes up the majority of respondents.

**Gender:**

**Table 4.3:** Distribution of respondents according to their gender.

Sr. No.	Particulars	Respondents			
		Small	Medium	Large	Total
1	Male	44	32	16	92 (83.63%)
2	Female	10	5	3	18 (16.37%)
<b>Total</b>		<b>54</b>	<b>37</b>	<b>19</b>	<b>110 (100%)</b>

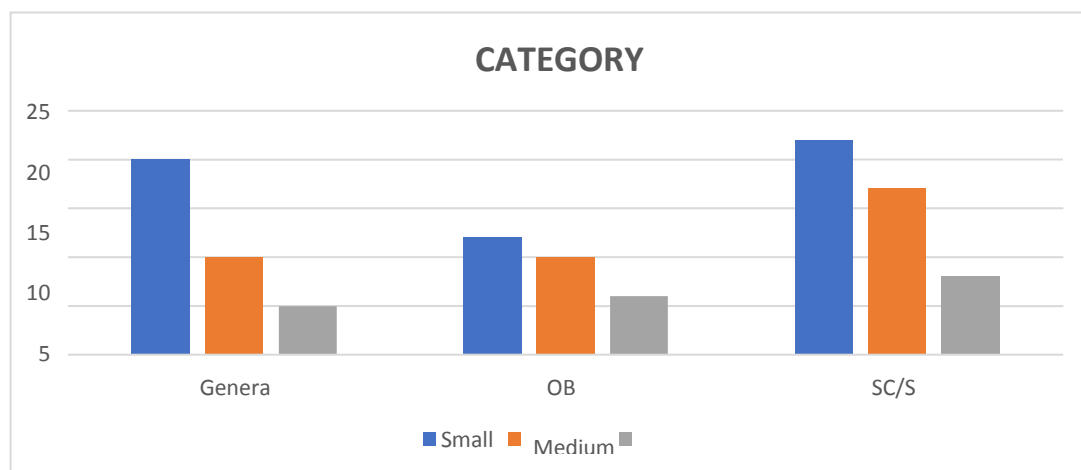
**Fig 4.3:** Graphical representation of respondents according to their Gender.

As seen above One of the most important sociodemographic factors in this study is gender. Gender plays a crucial role in market-related studies since it influences how people make purchasing decisions. Men and women tend to come to different conclusions while making purchases because of differences in their perception and socialisation. There were 110 responders in all, 92 of whom were men (83.63%), and 18 of them were women (16.37% of the sample as a whole).

.Category

**Table 4.4:** Distribution of respondents according to their Category.

Sr. No.	Particulars	Respondents			
		Small	Medium	Large	Total
1	General	20	10	5	35 (31.81%)
2	OBC	12	10	6	28 (25.45%)
3	SC/ST	22	17	8	47 (42.72%)
<b>Total</b>		<b>54</b>	<b>37</b>	<b>19</b>	<b>110 (100%)</b>



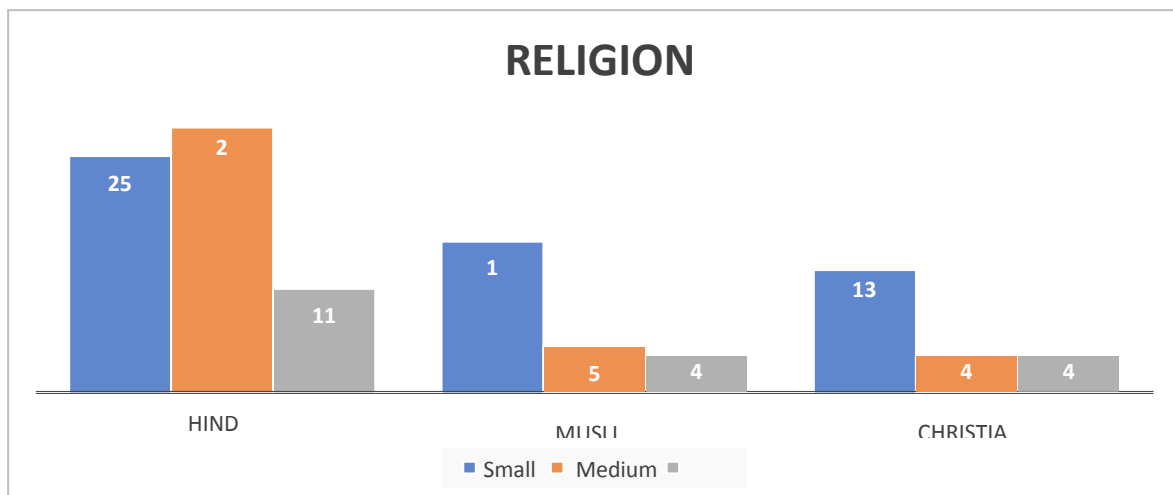
**Fig 4.4:** Graphical representation of respondents according to their Category.

As seen above, one of the main sociodemographic variables in this study is Category. Caste plays a key role in market research since it influences purchasing decisions. Category tends to reach different conclusions while making purchases as a result of the differences in their perception and socialisation. Out of the total, 110 respondents, 35 (31.81%) belonged to the general category, 28 (25.4%) to the OBC category, and the remainder 47 (42.72%) to the SC/ST category.

**Religion:**

**Table 4.5 :** Distribution of respondents according to their Religion.

Sr. No	Particulars	Respondents			
		Small	Medium	Large	Total
1	Hindu	25	28	11	64 (58.18%)
2	Muslim	16	5	4	25 (22.72%)
3	Christian	13	4	4	21 (19.09%)
<b>Total</b>					

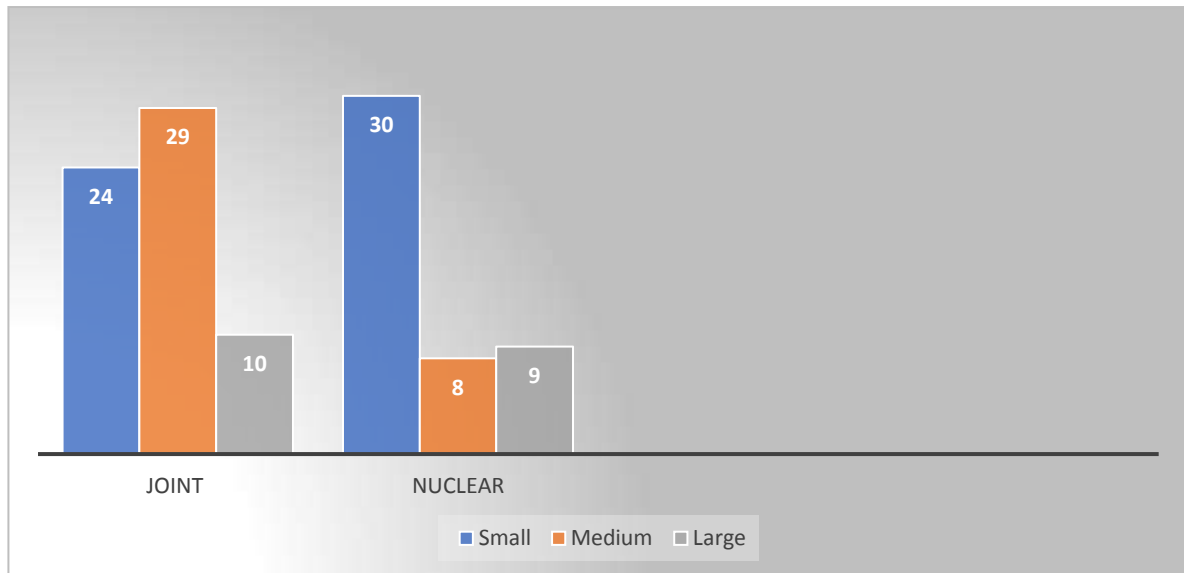


**Fig 4.5** Graphical representation of respondents according to their Religion. As was said above, one of the main sociodemographic factors in this study is religion. Religion has a crucial relation in market-related studies since it influences purchasing decisions. Relationships often reach different purchasing decisions as a result of the differences in their perceptions and socialisation. Out of the total 110 respondents, 64 were Hindu (58.18%), 25 were Muslim (22.72%), and the remaining 21 were Christians (19.09% of the sample as a whole).

**Family Type**

**Table 4.6:** Distribution of farmer according to their family type

Sr. No.	Particulars	Respondents			
		Small	Medium	Large	Total
1	Joint	24	29	10	63 (57.27%)
2	Nuclear	30	8	9	47 (42.73%)



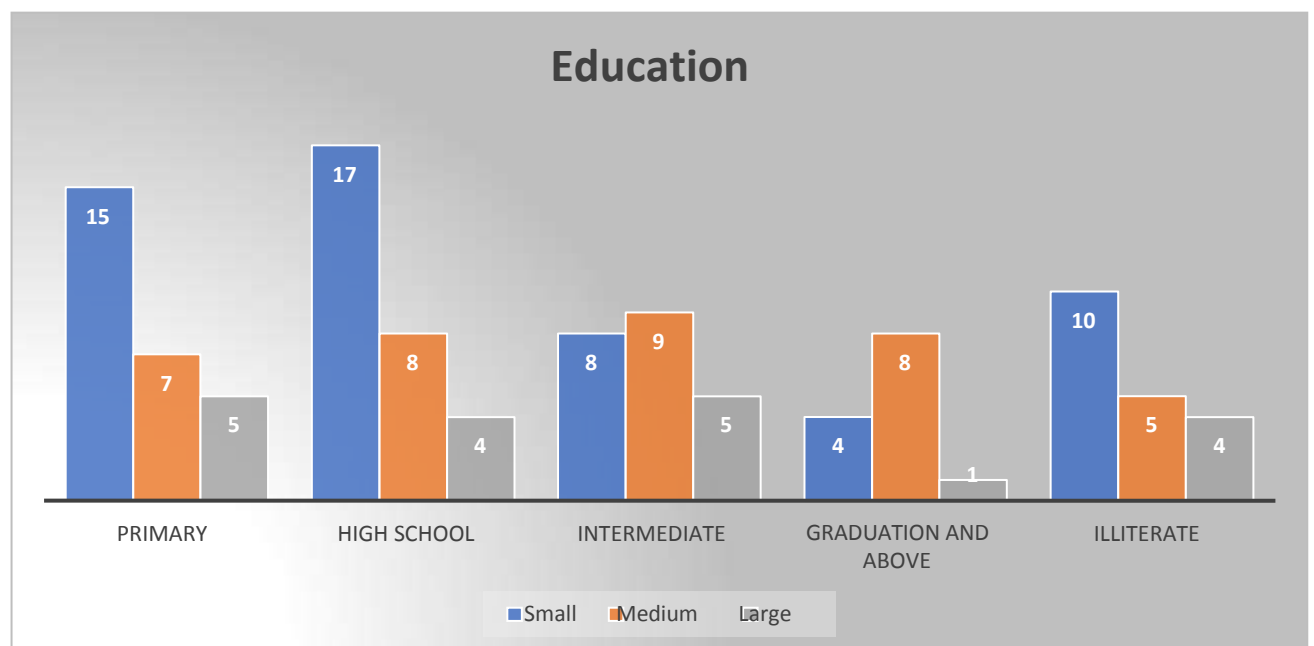
**Fig 4.6 :** Graphical representation of respondents according to their Family Type.

That is one of the Family type socio-demographic variables in this study, as shown in the table and chart above. Family plays a crucial role in market research since it influences purchasing decisions. Joint family and nuclear family members frequently reach different purchasing decisions as a result of the differences in their perceptions and socialisation. Out of the total of 110 respondents, 63 respondents (57.27%) are from joint families, and 47 respondents (42.73%) are from nuclear families.

#### Education:

**Table 4.7:** Distribution of farmer according to their Education

Sr. No.	Particulars	Respondents			Total
		Small	Medium	Large	
1.	Primary	15	7	5	27 (24.54%)
2.	High School	17	8	4	29 (26.36%)
3.	Intermediate	8	9	5	22 (20%)
4.	Graduation & above	4	8	1	13 (11.81%)
<b>Total Literate</b>		<b>44</b>	<b>32</b>	<b>15</b>	<b>91 (82.72%)</b>
5.	Illiterate	10	5	4	19 (17.27%)
<b>Total</b>		<b>54</b>	<b>37</b>	<b>19</b>	<b>110</b>



**Fig 4.7:** Distribution of respondents according to their education.

As shown above, another sociodemographic component taken into account in this study of consumer behaviour is education. 19 of the 110 responders from the table below were found to be illiterate. The majority of respondents had high school degrees, according to the research. They make up 29 (26.36%), 27 (24.54%) were found to be qualified via primary, 22 (20%) were found to be qualified through intermediate, and 13 (11.81%) were found to be qualified through graduate school. As can be seen, the primary category, which is 27 (24.54%), is the one with the most members.

To Identify The Various Current Marketing Channels For Inland Fish (Catla).

#### 4.2.1 Marketing Channel:

Channel I

Producer- Consumer

Channel – II

Producer – Wholesaler – Consumer

Channel – III

Producer- Wholesaler – Retailer- Consumer

**Table 4.8:** Reveals the preferred marketing channel by the respondents.

Sr. No.	Channel Type	No of Respondents	Percentage
1.	Channel – I	05	4.54%
2.	Channel – II	25	22.73%
3	Channel-III	80	72.73%
<b>Total</b>		<b>110</b>	<b>100%</b>



**Fig 4.8 :** Graphical representation of respondents according to their preferred marketing channel in buying and selling of inland fish (catla).

The information above shows that during the study, out of 110 participants, 5 (4.54%) preferred channel 1 for buying and selling inland fish (catla) through that channel, 25 (22.73%) preferred channel 2, and 80 (72.73%) respondents preferred channel 3 for buying or selling inland fish catla in the study area.

Consumer Purchasing Patterns.

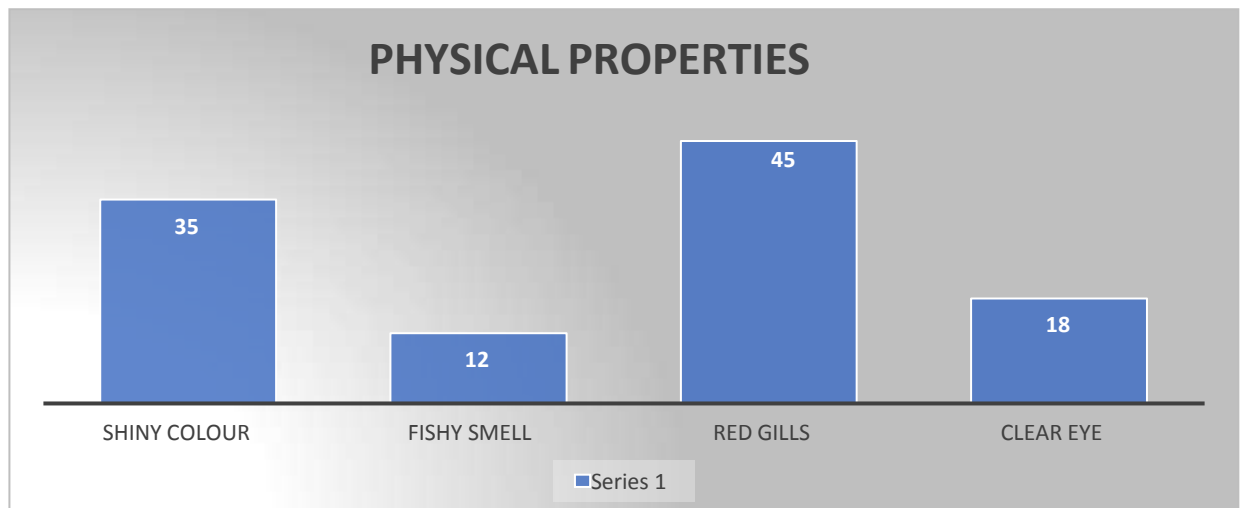
To Identify The Various Current Marketing Channels For Inland Fish (Catla).

#### Physical Properties

**Table 4.9 :** Distribution of respondents according to their buying behaviour on Physical properties of inland fish (catla) while buying.

Sr. No.	Particulars	Frequency	Percentage
1.	Shiny colour	35	31.82%
2.	Fishy Smell	12	10.91%
3	Red gills	45	40.91%
4.	Clear Eye	18	16.36%
	<b>Total</b>	<b>110</b>	<b>100%</b>





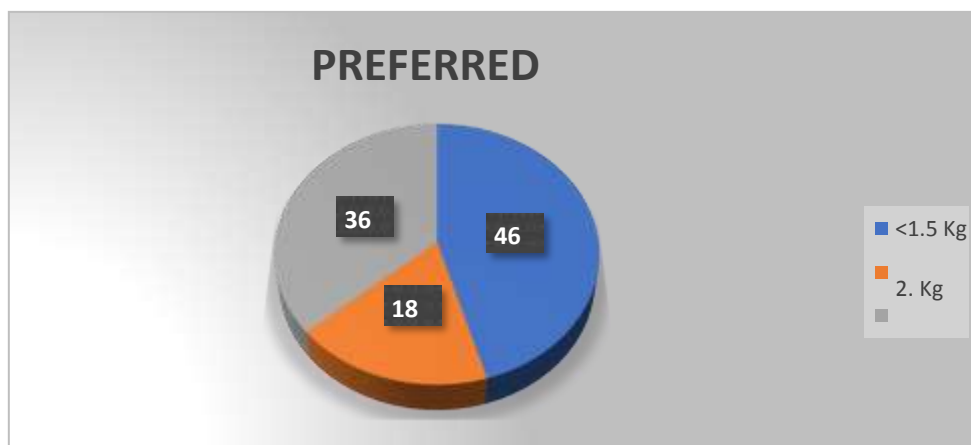
**Fig 4.9 :** Graphical representation of respondents over the physical properties they look while buying inland fish catla .

According to the data in the table and graph above, respondents prioritise shiny colour, fishy smell, red gills, and clear eyes when purchasing inland fish (catla). Of those, 35 respondents prioritise shiny colour, 12 respondents prioritise fishy smell, and 45 respondents prioritise red gills.

#### Preferred Weight

**Table 4.10:** Distribution of respondents according to their buying behaviour over the weight of inland fish catla while buying.

Sr. No	Particulars	Frequency	Percentage
1	<1.5kg	50	45.45%
2	2kg	20	18.18%
3	>2 kg	40	36.37%
<b>Total</b>		<b>110</b>	<b>100%</b>



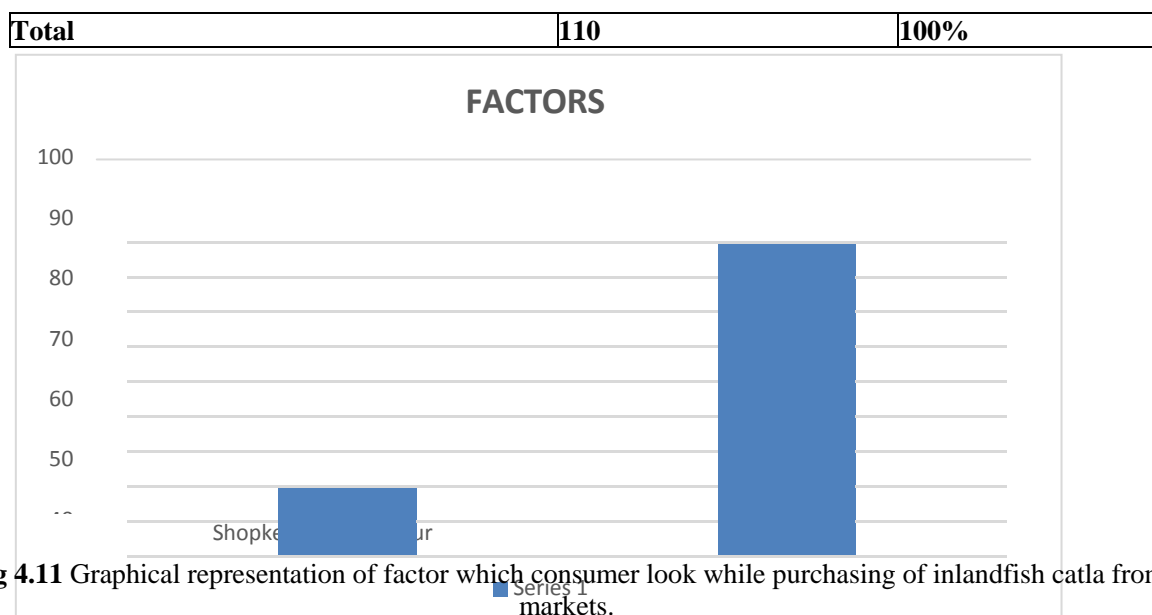
**Fig 4.10 :** Graphical representation of respondents according to their buying behavior over the weight .

According to the above table and graph, 50 respondents (45.45%) responded in favour of inland fish (catla) with a preferred weight of less than 1.5 kg, 20 respondents (18.18%) in favour of inland fish (catla) with a preferred weight of up to 2 kg, and 40 respondents (36.37%) in favour of inland fish (catla) with a preferred weight of more than 2 kg in the study area.

#### Shopkeeper Behaviour and Price

**Table 4.11:** Distribution of respondent according to their buying behaviour over the Shopkeeper reputation in their eye and price while buying of inland fish catla.

Sr. No	Particulars	Frequency	Percentage
1	Shopkeeper behaviour	20	18.18%
2	Price	90	81.82%



**Fig 4.11** Graphical representation of factor which consumer look while purchasing of inland fish catla from markets.

The table and graph above show that 20 respondents (18.18%) check over the shopkeeper's behaviour, or how they treat their customers, and 90 respondents (81.82%) look over the pricing when buying catla fish from the inland sea.

#### Price Spread, Producer's Share In Consumer Rupees And Marketing Efficiency In Different Marketing Channel

**Table 4.12** Price spread, Producer's Share in Consumer rupees and Marketing Efficiency of Inland fish (catla) through marketing channel I.

##### Producer- Consumer

Sr. No.	Particulars	Value in Rs./Quintal	Value in Rs./kg
1	Producer sale price to consumer	20,000	200
<b>Charges Borne by producer</b>			
1	Transportation cost	282	2.82
2	Loading and unloading cost	160	1.6
3	Market Entry Fee	200	2
4	Miscellaneous charges	150	1.5
Total cost (1-4)		792	7.92
<b>Net price Received by producer</b>		<b>19,208</b>	<b>192.08</b>
<b>Total Marketing Cost</b>		<b>792</b>	<b>7.92</b>
<b>Marketing efficiency</b>		<b>1.85%</b>	<b>1.85%</b>
<b>Price Spread</b>		-	-
<b>Producer share in Consumer Rupees</b>		<b>96.04%</b>	<b>96.04%</b>

According to Table 4.12, the selling price of catla fish through channel 1 is Rs 20,000 per quintal from the producer to the customer, while the producer's marketing expenses are Rs 792 per quintal and the marketing margin channel is Rs 1000. In the end, the marketing effectiveness is 1.85%, and channel 1's producer share of consumer rupees is 96.04%.

**Table 4.13** : Price spread, Producer's Share in Consumer rupees and Marketing Efficiency of Inland fish (catla) through marketing channel II

##### Producer – Wholesaler -Consumer

Sr. No.	Particulars	Value in Rs./Quintal
1	<b>Producer sale price to wholesaler</b>	<b>22000</b>
<b>Charges Borne by producer</b>		
1	Transportation cost	282
2	Loading and unloading cost	160
3	Market Entry Fee	200
4	Miscellaneous charges	150
<b>Total cost (1-4)</b>		<b>792</b>

<b>Net price Received by producer</b>		<b>21208</b>
<b>Wholesaler price to consumer</b>		<b>25500</b>
Cost incurred by Wholesaler		
1	Loading and unloading cost	160
2	Transportation cost	250
3	Market Entry Fee	200
	Miscellaneous charges	100
<b>TOTAL COST INCURRED BY WHOLESALER</b>		<b>710</b>
<b>Margin of Wholesaler</b>		<b>2790</b>
<b>Sale price to consumer per kg</b>		<b>255/kg</b>
<b>Total Marketing cost</b>		<b>1502</b>
<b>Total Marketing margin</b>		<b>14790</b>
<b>Marketing Efficiency</b>		<b>1.56%</b>
<b>Price Spread</b>		<b>3582</b>
<b>Producer's Share in Consumer Rupees</b>		<b>83.16%</b>

**Table 4.13** shows that the wholesaler's selling price for catla the inland fish is Rs 25500, with a profit margin of Rs 2790 per quintal, while the producer's sale price to the wholesaler is Rs 22000/quintal. The producer's marketing costs are Rs 792/quintal, with a profit margin of Rs 12000/quintal. The wholesaler's marketing expense for selling catla fish is Rs 710 per quintal. The overall marketing expense for channel 2 is Rs. 1502/quintal, whereas the channel's total marketing margin is Rs. 14790/quintal. Ultimately, channel 2's marketing effectiveness is 1.56%, its pricing spread is Rs 3582, and its producers' share of consumer rupees is 83.16%. Price spread, producer share in consumer rupees, and marketing effectiveness of inland fish (catla) are shown in Table 4.14. Producer-Wholesaler-Retailer-Consumer

Sr. No.	Particulars	Value in Rs./Quintal
1	Producer sale price to wholesaler	22000
Charges Borne by producer		
1	Transportation cost	282
2	Loading and unloading cost	160
3	Market Entry Fee	200
4	Miscellaneous charges	150
<b>Total cost (1-4)</b>		<b>792</b>
Net price Received by producer		21208
<b>Margin of producer</b>		<b>12000</b>
<b>Wholesaler price to Retailer</b>		<b>24800</b>
Cost incurred by Wholesaler		
1	Loading and unloading cost	160
2	Transportation cost	250
3	Market Entry Fee	200
4	Miscellaneous charges	100
<b>TOTAL COST INCURRED BY WHOLESALER</b>		<b>710</b>
<b>Margin of Wholesaler</b>		<b>2090</b>
Cost incurred by retailer		
1	Loading and unloading cost	150
2	Transportation cost	130
3	Market Entry Fee	200
4	Miscellaneous charges	75
<b>Total cost (1-4)</b>		<b>555</b>
<b>Selling price from retailer to consumer</b>		<b>28178</b>
<b>Margin of retailer</b>		<b>2823</b>
<b>Sale price to consumer per kg</b>		<b>281.78</b>
<b>Total Marketing cost</b>		<b>2057</b>
<b>Total Marketing margin</b>		<b>16913</b>
<b>Marketing Efficiency</b>		<b>1.48%</b>
<b>Price Spread</b>		<b>6970</b>
<b>Producer's Share in Consumer Rupees</b>		<b>75.26%</b>

**Table 4.14** reveals that producer sale price to wholesaler is 22000/quintal of catla the inland fish, marketing cost incurred by producer is Rs 792/quintal, with profit margin of Rs 12000/quintal, net price received by producer is Rs 21208/quintal and selling price from wholesaler to retailer is Rs 24800, the cost incurred by wholesaler in marketing is Rs 710/quintal and profit which wholesaler gets in selling catla to retailer is Rs 2090/quintal. Consumer pricing from retailer on channel 3 is Rs. 28178 per quintal; retailer cost for selling catla is Rs. 555 per quintal; profit is Rs. 2823 per quintal. In the end, it is discovered that channel 3's entire marketing expense amounts to Rs 2057, its total marketing profit is Rs 16913, and its marketing effectiveness is 1.48%. seen in channel 3 is Rs 6970 and producer's share in consumer rupees is Rs 75.26%.

**Table: 4.15** Price spread, Producer's Share in Consumer Rupee and Marketing Efficiency on inland fish in all the existing marketing channel.

Sr. No.	Channel	Price Spread	Producer share consumer Rupees	Marketing Efficiency
1	Channel I	-	96.04%	1.85%
2	Channel II	3582	83.16%	1.56%
3	Channel III	6970	75.26%	1.48%

Above table reveals that price spread, producer's share in consumer rupee and marketing efficiency of inland fish marketing in all the existing marketing channel involved. In channel 1, producer share in consumer rupee is Rs. 96.04%, marketing efficiency is 1.85%. In channel 2 price spread is Rs.3582, producer share in consumer rupee is Rs. 83.16%, marketing efficiency is 1.56%. In channel 3 price spread is Rs.6970, producer share in consumer rupee is Rs. 75.26%, marketing efficiency is 1.48%.

#### CONSTRAINTS IN MARKETING OF INLAND FISH

##### *Constraints in marketing of Inland fish (catla)*

Sr. No.	Particulars	Frequency	Ranking
1	Frequent price fluctuation	103	II
2	Lack of Awareness of new technologies	87	V
3	Lack of information about government schemes and subsidies	85	VI
4	Lack of amenities and facilities in the market	82	VIII
5	High transportation cost	95	III
6	Lack of cooperative in marketing society at village level	83	VII
7	Lack of proper infrastructure in market	90	IV
8	High Commission charges	105	I

According to **Table 4.14**, there are eight marketing restrictions that have an impact on the marketing of catla fish in the Darjeeling area of West Bengal, including high commission fees (ranked I based on responses from 105 respondents), Frequent price fluctuation came in second with 103 respondents, high transportation costs came in third with 95 respondents, inadequate market infrastructure came in fourth with 90 respondents, lack of awareness of new technologies came in fifth with 87 respondents, lack of knowledge of government programmes and subsidies came in sixth with 85 respondents, and the lack of cooperative marketing society at the village level came in eighth with 83 respondents.

#### **Summary and Conclusion:**

##### **Summary:**

The study found that the majority of respondents had small farms, with medium and large farms coming in second and third. Young people make up the majority of respondents, followed by older people and middle-aged people. Male respondents made up a larger proportion of the study's population than female respondents, it was discovered during the research. It was discovered that the majority of the overall sample belonged to the SC/ST category, followed by the general and OBC categories. In terms of religion, it was discovered that Hindus made up the majority of respondents, followed by Muslims and Christians. In contrast to respondents who lived in nuclear families, it was discovered during the study that the majority of respondents lived in joint families the greatest number of respondents are literate (83%) and 17% of respondents were illiterate. Three marketing channels have been identified as being active in the Darjeeling district's marketing of inland fish catla. Channel III, which is a producer-wholesaler-retailer-consumer, is the most popular among them, followed by Channel II, which is a producer-wholesaler-consumer, and Channel I, which is a producer-consumer. It has also been discovered that a variety of factors, including physical characteristics, preferred weight, shopkeeper reputation, and pricing, influence consumer purchasing behaviour. demonstrates that the marketing of catla fish in the Darjeeling area of West Bengal is affected by eight marketing constraints. High commission fees were ranked first by 105 respondents, frequent price changes were ranked second by 103 respondents, high transport costs were ranked third by 95 respondents, and inadequate infrastructure was rated fourth by 95 respondents having 90

responders and an IV-ranked reaction in the market, Lack of Knowledge of New Technologies, with 87 responses and a V-rated response. When 85 individuals responded, the lack of knowledge about government programmes and subsidies was ranked VI. Lack of amenities and facilities in market subsidies with 82 respondents response ranked VIII and Lack of cooperation in marketing society at the village level with 83 respondents response ranked VII.

#### **Major Findings:**

Reveals One of the key sociodemographic factors in this study is farm size. Farm size has a crucial association in market-related studies since it influences purchasing decisions. Farm size tends to draw different conclusions when purchasing as a result of the differences in their perception and socialisation. Out of the total of 110 respondents, 54 owned small farms, 37 owned medium-sized farms, and the remaining 19 owned large farms.

Discloses that Age is an important sociodemographic element in this study. The physical and psychological characteristics of the consumer, which in turn affect his or her purchasing behaviour, are why age is given such priority in market-related studies. It can be inferred from this table that 55 (50%) respondents fall into the young age group, 25 (22.72%) respondents fall into the medium age group, and 30 (27.27%) respondents fall into the senior age group. The majority of replies are therefore young people.

In this study, one of the most important sociodemographic factors is gender. Gender has a crucial association in market-related research since it influences purchasing decisions. Men and women tend to reach different purchasing decisions as a result of the differences in their perceptions and socialisation. Out of the total, 110 respondents 92 respondents were male, that is 83.63% while the Remaining 18 were female that is 16.37% of total sample.

Demonstrates that one of the key socio-demographic factors in this study is Category. Caste is an important connection in market-related studies because it influences purchasing decisions. Because of the differences in their perception and socialisation, categories tend to reach different conclusions when making purchases. Out of the total, 110 respondents, 35 (31.81%) were in the general group, 12 (25.45%) were in the OBC category, and the remainder 47 (42.72%) were SC/ST.

One of the main sociodemographic factors in this study is religion. Religion has a crucial relation in market-related studies since it influences purchasing decisions. Relationships often reach different purchasing decisions as a result of the differences in their perceptions and socialisation. Out of the total 110 respondents, 65 were Hindu (58.18%), 25 were Muslim (22.72%), and the remaining 21 were Christians (19.09% of the sample as a whole).reveals that this is one of the sociodemographic factors in this study that relate to families. Family plays a crucial role in market research since it influences purchasing decisions. Joint family and nuclear family members frequently reach different purchasing decisions as a result of the differences in their perceptions and socialisation. it has an essential association in market-related research. Due to the distinction in their perception and socialization, relation tend to have distinct conclusions while buying. Out of the total 110 respondents, 65 were Hindu (58.18%), 25 were Muslim (22.72%), and the remaining 21 were Christians (19.09% of the sample as a whole) reveals that this is one of the sociodemographic factors in this study that relate to families. Family plays a crucial role in market research since it influences purchasing decisions. Joint family and nuclear family members frequently reach different purchasing decisions as a result of the differences in their perceptions and socialisation. Out of the total of 110 respondents, 63 respondents (57.27%) are from joint families, and 47 respondents (42.73%) are from nuclear families.

Reveals that education is another socio-demographic element taken into account in this study of consumer behaviour. 19 of the 110 responders from the table below were found to be illiterate. High school degrees were discovered to be held by the majority of respondents. They make up 29 (26.36%), 27 (24.54%) were found to be qualified via primary, 22 (20%) were found to be qualified through intermediate, and 13 (11.81%) were found to be qualified through graduate school. As can be seen, the primary category, which is 27 (24.54%), is the one with the most members. Reveals during the study that among 110 sample 5(4.54%) were preferring channel 1 to buy and sell Inland Fish (Catla) through channel 1, 25 (22.73%) were preferring channel 2 to buy and sell inland fish (catla) and left 80(72.73%) respondents were preferring channel -3 to buy or sell inland fish catla in the study area.

Reveals that respondents, when asked about the physical characteristics they consider when purchasing inland fish (catla), gave the following responses: 35 respondents chose shiny colour, 12 chose fishy smell, 45 chose red gills, and 18 chose clear eye reveals that, in the study area, 50 respondents responded to a question about the preferred weight they look for when purchasing inland fish (catla), 20 respondents responded to the question about the preferred weight up to 2 kg, and 40 respondents responded to the question about the preferred weight greater than 2 kg reveals that 20 respondents look at price as a factor while purchasing catla fish over the price while purchasing of inland fish catla.

Reveals that the cost of marketing for the producer is Rs792/quintal, the selling price of catla fish through channel 1 is Rs20,000/quintal, and the marketing margin channel is Rs10000. In the end, marketing effectiveness is 1.85%, while channel 1's producer share of consumer rupees is 96.04% reveals that the

wholesaler pays the producer 22000 per quintal of catla, an inland fish, with a profit margin of 12000 per quintal on marketing costs. The producer receives a net price of 21208 per quintal, and the wholesaler sells the fish to the consumer for 25500, with a profit margin of 2790 per quintal. The wholesaler's marketing expense for selling catla fish is Rs 710 per quintal. The overall marketing expense for channel 2 is \$150 2/quintal, while the channel's total marketing profit is Rs.14790/quintal eventually the marketing efficiency in channel 2 is 1.56%, price spread in channel 2 is Rs 4, and producers share in consumer rupees in channel 2 is 83.16%.

Reveals that producer sale price to wholesaler is 22000/quintal of catla the inland fish, marketing cost incurred by producer is Rs 792/quintal, with profit margin of Rs 12000/quintal, net price received by producer is Rs 21208/quintal and selling price from wholesaler to retailer is Rs 24800, the cost incurred by wholesaler in marketing is Rs 710/quintal and profit which wholesaler gets in selling catla to retailer is Rs 2090/quintal. Consumer pricing from retailer on channel 3 is Rs. 28178 per quintal; retailer cost for selling catla is Rs. 555 per quintal; profit is Rs. 2823 per quintal. In the end, it is discovered that channel 3's entire marketing expense amounts to Rs 2057, its total marketing profit is Rs 16913, and its marketing effectiveness is 1.48% in channel 3 is Rs 6970 and producer's share in consumer rupees is Rs 75.26%.

The responses from 105 respondents, numbered I through VIII, show that there are eight marketing restrictions that limit the marketing of catla fish in the Darjeeling district of West Bengal. Frequent price fluctuation came in second with 103 respondents, high transportation costs came in third with 95 respondents, inadequate market infrastructure came in fourth with 90 respondents, lack of awareness of new technologies came in fifth with 87 respondents, lack of knowledge of government programmes and subsidies came in sixth with 85 respondents, and the lack of cooperative marketing society at the village level came in eighth with 83 respondents.

#### Conclusion:

Fish aquaculture in inland waters is a successful industry. In a short period of time, it offers good profits. Production of inland fish (Catla) is most lucrative when it involves large farm groups (with an area of more than 3000m<sup>2</sup>). The primary goal of the study, which focuses on the marketing of inland fish (Catla) in the Darjeeling area, is to analyse socioeconomic characteristics of sample respondents, marketing channels, consumer purchasing patterns, pricing spreads, and constants in Catla production and marketing. The findings show that respondents' socioeconomic status was intermediate, and they had higher access to all of the assets thanks to their well-educated elementary school backgrounds. As opposed to channels I (producer-consumer) and II (producer-wholesaler-consumer), most respondents sold Catla fish through channel III. Shiny colour was more frequently observed in customer purchasing behaviour for physical attributes compared to fishy smell, red gills, and clear eyes. The majority of consumers preferred fish with a weight of less than 1.5 kilogrammes, followed by fish with a weight of between 2 and 2 kilogrammes. Consumers choose price above shopkeeper behaviour when comparing shopkeeper reputation and price. Compared to channels II and III, channel 1 has higher marketing efficiency. Channel I has the biggest producer share of consumer rupees, followed by Channel 2 and Channel 3. High transportation costs and frequent price changes were identified as major barriers to production and marketing fluctuations, Lack of information about government scheme and subsidies.

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